

COMPUTERWORLD

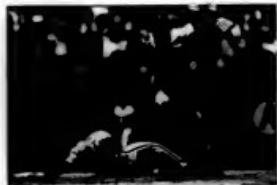
Strike! Team IS up at bat

By Mark Halper

On the eve of the major league baseball strike last week, team IS shops were preparing to stay in the game by implementing system improvements ordinarily reserved for the off-season.

Some of the major league information systems shops were also bracing themselves for an onslaught of ticket refund processing. Many IS directors said

Striket, page 16



The strike will give IS time to work on extra projects

PC tracking busts budgets

Centralized management tools on tap, will monitor LAN assets

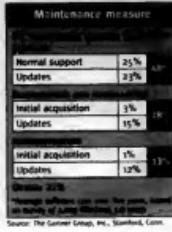
By Ed Seaman
and Elizabeth Horwitt

Next year promises to be a more encouraging year for corporate information systems managers, who are rapidly losing the battle to manage hundreds and thousands of desktop systems across the enterprise.

Some vendors are now introducing limited solutions for tracking and managing departmental PC LANs. A host of products is expected later this year and into 1995 from the likes of IBM, Hewlett-Packard Co. and Microsoft Corp.

These will come none too soon for LAN administrators who see PC asset management as a regular budget-buster.

According to a recent Gartner Group, Inc. report, an automated software distribution and installa-



tion package can reduce the cost of managing software installations and updates across a 2,000-node LAN by more than 80%. That cost comes to more than \$40 million over five years, the report noted.

"Administering PCs is a pain. I spend more time than I want with Visual Basic writing little Windows-based executables to manage [configuration files] or moving stuff across multiple PCs," said David Day, a network analyst at DowBrands in Indianapolis.

The company has more than 600 Compaq Computer Corp. 386-based Windows clients and is on the verge of moving from Bayan Systems, Inc.'s Visor to Microsoft's Windows NT Advanced Server. The driving force behind that move is the ease of administration features that NT Advanced Server offers, in combination with Microsoft's upcoming Hermes systems management, Day said.

Across the board, IS managers are searching for more comprehensive tools that can distribute,

PC tracking, page 14

Hospital casts net to snag doctors

By Stephen P. Klett Jr.

DALLAS

Michael Alverson envisions health care reform as a busy intersection on the emerging national information superhighway:

"[O]ne are the traffic cops," said the chief information officer at Presbyterian Healthcare System here. "You've got to watch out and be quick to react or you're road-killed."

Under intense pressure to do more with less, information systems departments at health care



organizations are hungry for low-cost technology that will help distribute information to users more efficiently.

In its quest to be the No. 1 inte-

grated health care provider in northern Texas, PBSH believes Integrated Services Digital Network

may be just what the doctor ordered.

On Oct. 1, the nonprofit hospital

will kick off an ISDN project aimed at expanding the reach of PBSH's 2,000-node network and helping it to recruit doctors.

Out of the gate, PBSH will connect 10 doctors' offices, called Primary Care locations, to its network via ISDN — free of charge. PBSH II hopes to connect hundreds of doctors to the network and, within the next couple of years, every affiliated hospital, clinic, laboratory and

Hospital, page 26

User lawsuits drag on for NCR

By Mary Brundel and Thomas Hoffman

Software can be damaging or even lethal to your business.

That's the heartbreaking picture presented by 30 to 50 wholesalers and financial institutions that have filed or settled suits in the past three years against the former NCR Corp., now known as AT&T Global Information Solutions, charging it with selling allegedly defective software.

Warehouse Manager, an older application marketed by NCR for its proprietary ITX operating system, is the target in the majority of the suits.

The number and range of suits that have surfaced involving NCR's older technology have grown since reports first emerged about 18 months ago [CW, Feb. 15, 1993]. More recent litigation targets a banking application running on the

User lawsuits, page 125

Software agents target 'cyberglut'

By Lynda Radosevich

SAN JOSE, CALIF.

Already drowning in data, computer users say electronic mail and workflow tools are only making matters worse.

Many vendors at the GroupWise '94 conference here last week provided evidence that they are working on software filtering agents that will diminish this so-called

"cyberglut." Yet the problem extends beyond the reaches of today's technology. It can be addressed only by getting end users to change their habits, users and analysts agreed.

For instance, Microsoft Corp. officials interviewed here said agent technology will be built into the company's forthcoming Exchange messaging server that will allow users to automatically throw certain messages into an electronic wastebasket.

Some show attendees were Software agents, page 125

NEWSBRIEF TITLES	CAR-RT SORT #8 CR25
BALUTZ2300M093099	0010111518
UNIVERSITY MICROFILMS INT	0001
UNIVERSITY MICROFILMS INT	0011 6 XC
SERIAL PUBLICATIONS	
300 N ZEEB RD	
ANN ARBOR MI 48103-1553	

VALUE
THE RETURN ON INVESTMENT
HANDS ONE TO
BROOKS. But more companies
are turning to the
company, S.C. Johnson
& Son, and Whirlpool
to learn formal ways to
do it in houses and homes.
SEE MANAGEMENT,
page 79.

No doubt about IT

Taming the NOS



The CW Guide to Network Operating Systems: Despite their continued advances in features, the market-leading enterprise network operating systems leave gaps in key areas, which users are forced to troubleshoot. The latest upgrades

also come with their own installation issues. Users rate the strengths and weaknesses of NetWare, Vines, Windows NT Advanced Server and OS/2 LAN Server in our Buyers' Satisfaction Scorecard. *Pages 88-96.*

NEWS

- **Notebooks** are selling slowly, and some vendors may be considering abandoning ship. *Page 4*
- Sybase is expected to make good on its 2-year-old promise to build systems management tools based on Tivoli's framework. *Page 4*
- Low-end and midrange client/server tools vendors seek to address the higher end but may fall short of the mark. *Page 4*
- IBM Chairman Louis V. Gerstner gives his company an E-mailed pep talk. *Page 8*
- Compaq and Texas Instruments try to open a server bottleneck. *Page 8*
- Major software vendors back off from promises to deliver LS API-compliant software products. *Page 10*
- Users point to client/server security holes, saying that vendors are responding slowly. *Page 12*
- The first software alternative to the Clipper encryption standard emerges. *Page 12*

- Hewlett-Packard fires a preliminary salvo into the distributed network and systems management battle. *Page 15*
- Dell's new notebooks and desktops come in at lower prices but will not spark a price war. *Page 20*
- Digital paves a migration path to AXP for its AI-Its-Users. *Page 25*

COMPUTER INDUSTRY

- Digital dissolves its consulting unit. *Page 32*

DESKTOP COMPUTING

- Notebook supply problems are popping up in an unexpected corner. *Page 39*

WORKGROUP COMPUTING

- Novell takes some of the bite out of NetWare upgrade costs. *Page 51*

ENTERPRISE NETWORKING

- Cisco's John Morgridge expects a convergence of switch and hub companies. *Page 59*

LARGE SYSTEMS

- Per-user pricing for databases from Informix and Oracle is largely unaffordable, leaving both vendors to rely on users' good will. *Page 63*

APPLICATION DEVELOPMENT

- KnowledgeWare users worry about how their products will be supported in the wake of the company's acquisition by Sterling. *Page 77*

IN DEPTH

- Wizards, Coaches, Advisors and Experts promise to help users work smarter, but Jared Spool of User Interface Engineering warns that today's Wizards do not represent the next generation of on-line help. *Page 89*

CAREERS

- OLE or OpenDoc. Which should you learn? *Page 107*

MARKETPLACE

- Corporate IS yields cautious control over network purchases at remote sites. *Page 114*

COMMENTARY

- Charles Babcock says if you see breakthroughs in object technology, the credit may rest in IBM's SOD. *Page 6*

- Howard Rubin aims to dispel the myths surrounding measurement techniques. *Page 37*

- Esther Dyson asks what would happen if software were free. *Page 37*

- Stan Schatt says network vendors must stop thinking, "If we build it, they will buy it." *Page 59*

Calendar

■ Company Index *Page 122*

■ Editorial/Letters to the editor *Page 36*

■ Aug. 12 Stock Ticker *Page 123*

■ How to contact Computerworld ... *Page 126*

Executive Briefing

While some vendors are introducing limited solutions for tracking and managing thousands of PCs, IS shops must wait until next year for more comprehensive solutions that manage desktop systems across the enterprise. *Page 1*

Cost justifying that new system is not easy, particularly using traditional ROI approaches, but some creative companies, such as JC Penney, Conoco and S.C. Johnson, have found it way to do it in leaps and bounds. Their key to success: nontraditional techniques for demonstrating information technology investment returns, such as buy-in from top management, application portfolios and user interview forms. *Page 79*

Vendors at Group Ware '94 say software agent technology will help users overwhelmed with electronic information, including too much E-mail. But users and analysts agree that users themselves are a big part of the problem, and they must change their practices. *Page 7*

With an eye toward doing things right, Federal Express, Bank of Montreal and 18 other Fortune 100 companies recently received the results of a "best practices" benchmarking study in which processes used by their respective IS organizations were compared in areas such as human resources planning and value delivery. *Page 28*

Although analyses lauded Computer Associates last week for its statement of direction on its ASK Group products, several ASK customers continue to question CA's ability to maintain Ingres' technical integrity. *Page 6*

Coping with staff personalities could cause IS managers' stress levels to rise. According to experts, anxiety comes from people, rather than actual task work; therefore, it's in everyone's best interest to ward off clashes before they occur. *Page 76*

In a downsizing move, Northrop Grumman's Commercial Aircraft Division is shifting its mainframe applications to run on Unix servers, relational databases and a combination of custom and packaged applications. *Page 57*

The revival of big-iron sales will largely be confined to this year, according to analysts. While the backlash against quick migration to client/server remains, much of the surge is credited to pent-up demand. *Page 63*

The 5th Wave by Rich Tennant



(201) 930-8200 dept. 123

UNIX

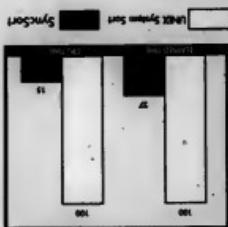


The UNIX System Sort

UNIX has its advantages, but its System Sort isn't one of them. All it can do is sort ASCII text - slowly! SyncSort provides the performance and functionality you need to make your commercial UNIX applications work.

To order SyncSort or a FREE copy of our booklet - *Making Your Commercial UNIX Applications Work* - call us.

FUNCTIONS



PERFORMANCE

Price, functions keep subnotebooks subpar

By Michael Fitzgerald

In the subnotebook market about to subside? Vendor vendors are taking a lesson from Dell's approach in this seemingly promising market by throwing their various designs at the customer canvas to see what sticks.

Users say they have yet to see something they would call art and are spending their information systems dollars elsewhere. The trend has vendors re-thinking their strategies.

"We're all getting blazed in the sub-notebook market," said an official at one notebook maker, who asked not to be named. "We'll make our budgets, but we're not going to meet our long-term expectations for this market. The overall market segment is not as large as we thought."

Can't get no satisfaction

The trouble with subnotebooks, users say, is they are underpowered, ergonomically challenging and overpriced. Subnotebooks weigh less than notebooks, a key benefit for users, but typically use smaller keyboards and screens and offer less storage and RAM than a notebook. They also have external floppy drives.

Users pan subnotebooks for their shortcomings, not their concept. In fact,

users say subnotebooks are a step in the right direction because what they really want are lighter and slightly smaller yet full-powered notebooks.

"People want light weight and small size, but [subnotebooks] haven't been functional enough," said Victor E. Muli-

an, president of Versa S, a notebook with a keyboard that is 99% full-size and a 9-in.-

As a result of these complaints, notebooks may get smaller without losing significant features.

A case in point is NEC Technologies, Inc.'s Versa S, a notebook with a keyboard that is 99% full-size and a 9-in.-

screen that tips the scales at a sub-notebook-like 4.2 pounds.

Similarly, AST Research, Inc. will today announce its Ascentia 500S subnotebook. The 500S weighs only 4½ pounds but has a 95% keyboard and a full-size, 9-in.- passive-matrix color screen. While it will hold up to a 3.4GHz-hard drive and has local bus video, its processor is a relatively slow 33-MHz i486SX. "We don't think [the subnotebook market] is dead at all, but we believe it has much different requirements than what we've seen so far," said Bret Berg, brand manager at AST. Berg said the nearly full-size keyboard and full-size screen should address user requirements.

Similarly, Dell Computer Corp. has backed off plans to ship a subnotebook

this summer but will ship one by the end of January, said John Medina, Dell's vice president of portable products. Medina said Dell has shifted its design focus toward "user-centric approach, rather than focusing on miniaturization."

A move to larger sizes pleased users.

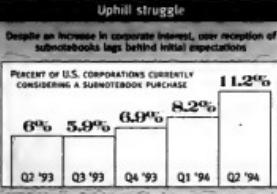
"Keyboard size is important," said Tom Balzarini, PC coordinator at Associated Grocers, Inc. in Seattle. He added that "just the general usability level [of subnotebooks] worries me; the smaller, the get, the scarier they get."

Power happy

But higher-end subnotebooks are the bright spots in the market. Vendor sources say their higher-powered subnotebooks, particularly those with color screens, are selling fairly well.

However, asynchronous subnotebooks seem to be a source of inventory distress. In tacit acknowledgment of this, the IBM PC Co., Compaq Computer Corp. and Toshiba have recently made huge price cuts. IBM's base model ThinkPad 560 now sells for \$899, while Compaq's base model Contura Aero is \$899. Toshiba's Portege T3400 seller is \$1,299.

Mike McGuire, an analyst at Dataquest, Inc., downplayed the low sales for subnotebooks, saying first-generation products are often rethought.



Partners target Unix management

By Kim S. Nash

Two years after vowing to build client/server systems management products, Sybase, Inc. and Tivoli Systems, Inc. plan to disclose today a set of tools that aims to bring mainframe fault-monitoring to Unix servers, according to sources close to Sybase.

Code-named Tanglewood, the product suite is based on the Tivoli Management Environment (TME), a set of graphical programs designed to track and troubleshoot network, hardware and software activity.

Integrating Sybase's SQL Server database and related add-ons with TME would give users a more coherent view of events on SQL Server and the non-Sybase products that affect database performance.

As distinctions blur between different vendors' core database features, "a common way to manage them all is becoming more and more important to users," said Herb Edelstein, an analyst at Eustice Associates in Potomac, Md.

Specifically, Sybase will unveil a shell that sits atop TME. The shell would let SQL Server administrators perform console management, capacity planning, network monitoring and other tasks, a Sybase insider said.

A Sybase spokeswoman confirmed that an announcement is planned for today but declined to give details. A spokesman for Austin, Texas-based Tivoli also declined to comment.

The Sybase/Tivoli team faces competition on a couple of fronts. Computer Associates Inter-

national, Inc. last week announced plans to integrate its recently acquired Ingres database with CA-Uncenter, an overarching management facility. Oracle Corp. recently skeptically put its plans to tie Oracle 7 to Hewlett-Packard's OpenView.

Tanglewood clinches Brewers Retail, Inc.'s bid to buy Tivoli, said Pompi Malai, information systems director at the beer distributor in Mississauga, Ontario.

"We were very concerned that systems management ... was not being addressed by Sybase, but [now] we're seeing some action," Malai said.

Still, users will not gain every systems management nicety found in the mainframe world.

For example, the concept of chargeback would be a useful mainframe carryover, noted Randy Corbett, a project engineer at Rockwell International Corp.'s Space Division in Downey, Calif. As it stands now, administrators have no standard way to monitor usage in a client/server setup, whether or not they bill end-user departments for server time, he said.

Tanglewood was built to support the System 10 release of Sybase's SQL Server. Still unclear, however, is whether Sybase will retrofit the suite to support previous versions of SQL Server, including Release 4.92, which is what most Sybase users currently run.

Volume shipments are expected by the end of the year. Pricing was not available.

Per-user pricing varies on honor system. See page 63.

Client/server tools lacking

By Melinda-Carol Balkin

As corporate developers move beyond the pilot stage for client/server applications and seek to create more transaction-intensive, complex programs, they are looking for tools that offer high-transaction data management, improved security and greater performance.

A number of vendors are targeting these needs with new releases of existing products, but some industry analysts questioned if the upgrades will sufficiently fill the bill for corporations seeking more sophisticated development tools.

Nuclear leader

Vendors ranging from Seer, Inc. to traditional computer-aided software engineering vendors such as Texas Instruments, Inc. have attempted to fill the gap, but no vendor has emerged as a clear leader. Buchman Information Systems, Inc. recently announced its Eclipse product, and new vendors on the scene such as Forte Software, Inc. will announce high-end tools this fall.

Market leader Powersoft Corp. is expected next month to release PowerBuilder 4.0, featuring multiplatform support, data pipeline support and connections to addi-

tional transaction processing monitors, including Novell, Inc.'s Tuxedo and AT&T's Global Information Solutions' Top End with Tngent International, Inc.

The company plans to address high-end user requirements via a new, three-tiered architecture with transaction-processing monitor middleware and remote procedure call mechanism. These will reside between clients and servers to manage transaction-intensive requirements, said beta sources briefed by Powersoft.

"One of the ways they intend to scale up is through power/buddy alliances: For repository use they'll partner with LBMIS; for application component distribution and [transaction management], they will use [transaction processing] monitors, which is in effect what [people have] been doing on mainframes for years," said Donald A. DePalma, an analyst at Fosterbridge Research, Inc., a Cambridge, Mass., consulting firm.

Powersoft must adequately test PowerBuilder with the other products to ensure they work well together, he added.

Also expected later this fall is Microsoft Corp.'s Visual Basic 4.0, which is expected to facilitate development of Object Linking and Embedding 2.0 applications.

BOTH COMPANIES HAVE PARALLEL PROCESSING STRATEGIES.

BUT ONLY ONE HAS PARALLEL PROCESSING SOFTWARE.

	ORACLE7	SYBASE System 10
Parallel Processing Strategy	YES	YES
Parallel OLTP Software	YES	NO
Parallel Index Software	YES	NO
Parallel Backup	YES	NO
Platforms Supported with Parallel Software	20+	Ø

Oracle7's parallel database software makes open system computers faster and more reliable than mainframes. Call Oracle for the software. Call Sybase for the slideshow.

ORACLE
1-800-633-1071-Ext.8166

SOM opens door to real world

Object software development is ferment, and a sizable fraction of this activity is due to the breakthrough represented by IBM's System Object Model (SOM). SOM and Distributed System Object Model (DSOM) are likely to open up more and more technologies to large-scale reuse by IS managers. SOM and DSOM underlie CORBA, a set of specifications that amount to de facto standard Object request brokers, the crucial method-dispatch engines for distributed objects, are being created in compliance with the CORBA standard, making it easier for businesses to plunge into object systems.

"We could go so far as to say the example of SOM is spawning Microsoft and Digital to generate specifications for Microsoft's Common Object Model, which allows SOM-style interfacing and language neutrality for Windows objects."

"SOM sort of beat everybody else to the punch," notes Paul Harman, editor of the monthly newsletter, "Object-Oriented Strategies" in San Francisco.

SOM circumnavigates two object-oriented barriers: object classes and language neutrality. It overcomes the inability of objects written in different languages to communicate with each other, including cases where both are written in C++ (they remained tongue-tied if the versions of C++ came from different vendors). It also frees object-oriented systems from the hobbling need to recompile both class libraries and the application with which they are to run each time a change is made in a library. This need imposes a heavy burden on any system that might undergo frequent changes and defeats one of the goals of object-oriented systems — rapid adaptability.

"With C++, a good deal of the information about the object being accessed gets compiled or 'hard-wired' into the application," says Frank Campagni, senior technologist on the staff of Cliff Reeves, director of object technology products at IBM in Austin, Texas. Any change to an object requires the changed library, all derived class libraries and the application to be recompiled.

Under SOM, this information remains strictly associated with the object. The information is calculated dynamically at runtime when the appropriate class libraries are initialized and compiled. Thus, an object that models a business product can change often, and the changes get incorporated into each run of the system.

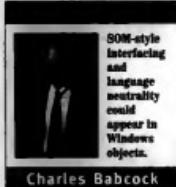
SOM might have addressed these goals through a clumsy, code-enumerated translator or other add-on software piece, but instead, it paved the way to split off a convention of the operating system world and build it into a compact clearinghouse for object communications.

Operating systems have a way to handle procedure calls, regardless of what language they're coming from, that amounts to an efficient, lowest-common-denominator linking convention. In a similar vein, SOM handles object messages with a linking convention that remains language-independent. A CORBA-compliant object request broker incorporates this linking convention as a small piece of assembler code that is specific to an operating system, Campagni says.

The resulting difference in object banding is similar to the difference between a static network and a dynamic one: A static network must be shut down, reanalyzed and reconfigured each time a PC is added to it. A dynamic network runs continuously and searches for new information, recognizing when a new PC has been added.

Thanks to the pioneering work of Ira Forman (the Metaclasses Maven) and others at IBM, SOM represents a move to a simpler, higher level of abstraction for objects, which allows them to better match up with objects in the real world. And getting closer to the real world remains what software development is all about.

Babcock is Computerworld's technical editor. His MC1 Mail address is 575-2737



Charles Babcock

SOM-style interfacing and language neutrality could appear in Windows objects.

Merger aftermath

Reaction split on CA's plan for ASK products

By Thomas Hoffman and Kim S. Nash

When Computer Associates International, Inc. last week released a set of white papers on its strategic directions for the recently acquired ASK Group, Inc. product suite, reaction from analysts and users was decidedly split.

Analysts landed CA for its strategic vision with technically-revered products such as CA-Ingres and CA-OpenRoad. They said CA had salvaged a chest of gems from a sinking vessel and is sincere in its efforts to add luster to this bounty.

Users, however, continued to voice skepticism about CA's ability and intent to maintain the technical integrity of the products. Some ASK users said they fear CA will do little to enhance their products and will milk the installed base for maintenance revenue. Industry observers claim CA did just that upon its acquisition of Cullinet Software, Inc. and its IDMS database.

"People in the user groups are a little bit fidgely right now, waiting to see CA deliver," said Frank Pellegrini, director of MIS at Public Broadcast Systems in Alexandria, Va., and an officer of the North American Ingres Users Association.

Reading between the lines

In CA defense, the vendor has not discontinued any ASK product development or support. And CA executives assert that the software giant's intentions to further Ingres and ASK product development are indeed honorable.

"Reading between the lines of CA's white papers, these are not maintenance releases CA has planned. They're planning to integrate ASK technologies into [their] broad product set and into the CA 386 architecture," said Peter Kasner, a vice president at Aberdeen Group in Boston.

Besides, CA did not acquire ASK for its residual maintenance revenue, analysts said. "CA wants to be a major player in the client/server market, so their intent with Ingres is not to drum up maintenance revenues like they did with Cullinet's IDMS. This is a strategic acquisition," said Shaku Atre, president of Atre, Inc., a consultancy in Rye, N.Y.

For example, CA-OpenRoad, an object-oriented, repository-based application development tool, is in beta testing at more than a dozen customer sites under Microsoft Corp.'s

Windows NT operating system. It is also being ported to all major versions of Unix, including those from Hewlett-Packard Co., Sun Microsystems, Inc. and IBM.

Not the end of the road

Although ASK failed to deliver a Windows NT version of OpenRoad by last May as promised, CA's plan to ship a complete package by year's end is better than alternative scenarios, analysts contend.

"ASK didn't have the financial viability to

Slight slip

Anticipating forthcoming Computer Associates' takeover of The ASK Group, here delayed projected release dates for some key ASK database products	
OpenRoad tools for Microsoft's Windows NT/Windows	Late May
OpenRoad 3.0 for Ingres and Oracle 7.3	Last month

ASK's partner CA's new promise

continue to invest in the product," said Aaron Goldberg, executive vice president of Computer Intelligence/InfoCorp in Santa Clara, Calif.

"CA is being left to pick up the pieces and make sure the product comes out, so I think ASK and Ingres customers are really going to benefit," he added.

Still, long delays could lose CA some customers, including Modisite Associates, Inc., an independent software provider — and Ingres' client — in Houston.

The firm looked to OpenRoad as a means to build applications once, then easily port them to various platforms, said Chuck O'Leary, a Modisite vice president. "I have a group of young [programmers] here who are itching to get projects done and know they can do it in C or some other tool, which we're seriously considering," O'Leary said. He said he will give CA three months to make progress before deciding what to do.

Corrections

Due to a reporting error, Digital Equipment Corp.'s Alpha AXP was described as a 64-bit system in the July 18 issue. It is a 32-bit system.

Wayne Kerschbaum is an analyst at Aberdeen Group in Boston; not Forrester Research, Inc. in Cambridge, Mass., as reported in the July 11 issue.

It was incorrectly reported in the July 25 issue that Ontario Hydro of Toronto was located in Hydro-Quebec.

Due to a production error, a credit was omitted from a photo of IBM Chief Executive Officer Louis V. Gerstner on page 101 in the Aug. 8 issue. The photo was from Lee Novovitch/Gamma Liaison.

WORKING TOGETHER TO BRIDGE OPEN SYSTEMS.

That's why the
Sun and Oracle,
two of the world's
leading open systems
vendors, have formed
a strategic alliance.
In the coming years of
increasingly complex
systems integration, we
will work together to

in running our businesses — a combined beta site of over 22,000 employees. No solution goes to market that we wouldn't rely on ourselves. For a copy of 'Oracle for Sun - An Enterprise Computing Platform' — an IDC white paper, call: 1-800-633-1071 Ext. 8160.



ORACLE

 **Sun**

News Shorts

Novell gets new chairman

Continuing his withdrawal from active leadership at Novell, Inc., founder Ray Noorda last week stepped down as chairman of the board. The position went to Robert J. Frankenberg, who took over from Noorda as president and chief executive officer of Novell in April. Noorda said he would continue as an active board member. Frankenberg was formerly vice president and general manager of the Personal Information Products Group at Hewlett-Packard Co.

Lotus pulls plug on improv

Further pruning back its desktop applications development efforts, Lotus Development Corp. last week said it is pulling the plug on its barely 2-year-old Improv spreadsheet. Lotus said the decision was based in part on recent efforts to channel development energies to other applications areas where the company can distinguish itself. Although Lotus would not divulge how many copies of Improv have shipped, a spokesman said 150,000 copies were sold during its first year on the market.

Security alert issued to SGI users

The Computer Emergency Response Team (CERT) at Carnegie Mellon University in Pittsburgh on Friday issued an Internet alert about a security vulnerability in the help system and print manager in Silenos Graphics, Inc.'s Iris operating system, Versions 5.1.3 and 5.2. The flaw enables users to get unauthorized root access if they can log into an account on the system or gain physical access to the system console. A software patch is available from the company, and more information is available from CERT by electronic mail at cert@cert.org or by voice at (412) 268-7060.

Invent a new computer

A ruling last month from the U.S. Court of Appeals for the Federal Circuit in Washington may have the way for patenting inventions that can be implemented in either hardware or software. The decision apparently overturns a U.S. Patent Office policy that denies patents for inventions that can be implemented in software. The basis of the decision is that once a software program is loaded into the memory of a general-purpose computer, the computer can be viewed as a new machine eligible for patent protection.

Digital refreshes VAX line

In its most significant VAX upgrades in two years, Digital Equipment Corp. increased price/performance an average of 60% across its VAX line. It also simplified the product lineup by reducing the 4000 family from three to two systems, the MicroVAX 3100 from four to three and replaced the 7000 Model 800 with the 700. Digital also announced the OpenVMS Management Station, which enables users to manage one or more OpenVMS clusters from a Windows-based PC.

United Airlines shifts to Unix platform

United Airlines has standardized on Informix Software, Inc. databases for an enterprise-wide re-engineering effort that aims to move several key applications off IBM mainframes. Informix said last week—United, which is the largest airline in the world, plans to overhaul customer relations, flight operations, crew management and other systems for an unnamed Unix platform.

SHORT TAKES Legent Corp. Chief Executive Officer John Burton plans to step down early next year when his CEO contract expires.... Park City Group and Taco Bell Corp. announced plans to team up to develop a retail automation system that will eventually be installed in 3,200 stores.

IBM reorganization

Gerstner to staff: Don't relax

By Rosemary Calasso

IBM Chairman Louis V. Gerstner last week gave an electronic pep talk to the troops, urging staffers to guard against complacency in the wake of the company's improving financial performance. In particular, he sought to drive home the point that much hard work lies ahead.

"There is the temptation to sit back and start humming 'Happy Days Are Here Again,'" Gerstner said in an internal memo issued via IBM's computer network late last week. "Rather than celebrate, we have to commit to focus intensively on two overall tasks: eliminating unnecessary cost, duplication and bureaucracy; and implementing our business strategies."

Bob Djuricovic, a veteran IBM watcher and president of Annex Research, Inc. in Phoenix, said he recalled a similar Gerstner memo issued in the summer of 1983

that was less positive and stressed that "executives didn't lose focus on where the ball was."

In last week's memo, however, a kinder, gentler Gerstner stressed there was "much to be proud of in our performance."

Going once, going twice ...

IBM plans to auction off \$45 million worth of network formerly

housed in the company's art gallery at 50 Madison Ave. in New York. The move is part of

Chairman Louis Gerstner's charter to keep the company focused on what it does best — technology — and to shed assets not pertinent to that

focus.

No resting on laurels

Still, Gerstner made it equally clear that IBM staffers must focus on constructive change. He referred to an internal video he issued earlier this month that said IBM employees must make a commitment to three items: to win in the marketplace, to change and to one another. Gerstner said that those three directives are "not an electric prayer."

"No more focusing on our opponents down the ball.... No more endless meetings about the need to change and then going back to business as usual," Gerstner said in the memo.

Compaq, TI to team on fast Ethernet

By Jayakumar Vijayan

■ In what analysis called an important step in the company's bid to make its products play across the enterprise, Compaq Computer Corp. plans to partner with Texas Instruments, Inc. in the area of "fast" Ethernet technology, according to sources.

The announcement, expected later this month, will involve the development and manufacture of 100M bps/sec. Ethernet products such as adapter cards and possibly switches, according to sources briefed by the company. The first product — a 100Base-T adapter card with a 32-bit Peripheral Component Interconnect interface — is expected sometime next year, the sources said.

Compaq is initially expected to offer 100M bps/sec. Ethernet connectivity in the form of adapter cards that can be inserted into Ethernet ports on network-ready boxes. It will also work with TI to integrate network chips on the motherboard itself, the sources said. Both Compaq and TI declined to comment.

For network administrators cramped by growing server bandwidth bottleneck problems, the impending partnership could result in server products with increased communications bandwidth and higher performance. The 100M bps/sec. technology gives servers more network bandwidth, thus easing bottlenecks. A 100M bps/sec. link to a server, whether it is a Fiber Distributed Data Interface

or a fast Ethernet connection, is regarded by many as a solution for server congestion.

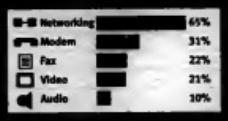
Users are looking forward to 100M bps/sec. technology, although most said they do not have an immediate need for it.

"Applications like videoconferencing and real-time audio are going to drive the need for greater bandwidth," said Mahesh Ivalasitham, network administrator at the University of Illinois at Urbana-Champaign. The university is trying to use multiprocessor servers as database and application servers and could need more bandwidth eventually, but it has little need for 100M bps/sec. support right now, he said.

Domino effect

Other users said they liked the idea of a 100Base-T Ethernet connection but had mixed feelings about an on-board chip solution. "It's nice to have [network] functionality built into the motherboard, but if that functionality goes south, you can have big problems," said Marshall Fernholz, network control manager at the American Medical Association in Chicago. Fernholz said that while network adapter cards give users the option of pulling out the card if something goes wrong, board-level functionality would mean pulling off the entire motherboard.

"Multimedia applications are al-

Most desired PC capabilities

SOURCE: DELL COMPUTER CORP., SAN JOSE, CALIF.

ready pushing the envelope on 100M bps/sec. technology," so there could be a growing demand for higher-performance technologies, said Peter Kastner, president of Aberdeen Group in Boston.

Compaq's planned alliance with TI comes at a time when there are indications that higher-speed, Intel Corp. Pentium-based servers could optimally utilize the increased bandwidth offered by 100Base-T technology. A study by Infonetics Research, Inc. in San Jose, Calif., revealed that despite relatively high investment costs in terms of staff training and management software, higher-speed servers — in the Pentium class for instance — would likely need 100M bps/sec. technology to fully exploit processor and throughput capabilities.

The study also revealed that fast Ethernet may be overkill for 486-based servers where the server, not the medium, is the point of traffic. The study said Novell, Inc. NetWare 486 servers have an inherent bandwidth limitation of about 200M bps/sec., that renders inconsequential any gains from 100Base-T.

Whoa! I've got to see this for myself.



Send me a FREE copy of the TPC-8 Benchmark Report.

Please answer the following:

1. My organization uses the following OS. (Check all that apply)

- AIX
- MS Windows NT
- Sun OS/Solaris
- BSD
- Macintosh
- Other
- HPUX
- OS/2
- UNIX/SVR4
- Interactive UNIX
- SCO UNIX
- Other _____

2. What is your role in the purchasing decision? (Check one)

- Requestor
- Approver
- User
- Specifier
- Purchaser

3. When do you plan to purchase? (Check one)

- Within 3 months
- Within the next year
- Within 6 months
- Information only

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone (_____) _____

Fax (_____) _____

■ NOVELL ■



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST-CLASS MAIL PERMIT NO 688 SAN FERNANDO, CA

POSTAGE WILL BE PAID BY ADDRESSEE

N O V E L L.

DEPARTMENT 173
PO BOX 9000
SAN FERNANDO CA 91341-9978



It's not whether you win or lose, it's how pathetically slow and overpriced you make the other guys look.

It's not their fault, they wanted to be faster and less expensive than UnixWare.

But in the latest independent TPC-B* Benchmark tests, UnixWare achieved unprecedented results in price-performance, easily beating MS Windows NT, Solaris and SCO UNIX. It set a new record, making it the most cost-effective and high performance 32-bit application server in the world.

If it were just fast, that would be one thing. But UnixWare also clearly demonstrated new highs in reliability and recoverability from system failure.

All this should not surprise you, since UnixWare is built on the latest version of UNIX System V Release 4, and was developed by the same dedicated group of overzealous engineers who

created the original UNIX operating system. And UnixWare is versatile, supporting over 2,500 business-critical applications.

To celebrate this thrilling victory, we're slashing up to 70% off the list price on a conversion to UnixWare from other UNIX systems. And while you're off upgrading from slow and overpriced to number one, we'll be quietly working on the next world record.

And the competition will be trying to recoup.

It's so hard to catch up, once you've fallen behind. Which is yet another reason why you should be using UnixWare now.

NOVELL.

The Past, Present, and Future of Network Computing.



Call 1-800-879-6168 for a FREE copy of the TPC-B Benchmark Report.

*UnixWare test results from March 26, 1994 for a single Pentium™ processor Compaq® Prokent™ 2000 Model 5/95-4200A running OracleWare™ System-UnixWare Edition. Results 6433 tpsB based on 184.54 ipsB. Other results detailed in TPC-B Benchmark Report. All company/product names are trademarks and/or registered trademarks of their respective companies.

Vendors back away from License Server API

By William Brandel

None missing:

That is the fate of a much-lauded technology called License Server Application Programmer Interface (LS API), which was supposed to facilitate software licensing compliance at user sites.

Due to hit the market later this year,

LS API has now hit the skids. Representatives from major software vendors, who just a few months ago said they were in general agreement over LS API, now say the damage is on its merits.

The integration of LS API into desktop applications and operating systems would have made it dramatically easier for users to comply with disparate soft-

ware licensing schemes.

"As users, we definitely need these tools and technology," said KJ Wilson, microcomputer manager at Stone Container Corp. in Chicago. "This would save us support costs and resources. Obviously it is not in the vendors' interest to give us the tools that would enable us to discover what we don't need as much software as

we are buying."

Indeed, all major vendors say they are either postponing or completely scrapping any plans to include the technology in their software products.

Dream deferred

By inserting LS API in desktop applications, network managers would be able to control software usage.

CURRENT



At Lotus Development Corp. in Cambridge, Mass., a spokesman said the company has dropped all development efforts to place LS API in its desktop products. And Novell, Inc. officials last week confirmed that the company has pulled the beta version of NetWare LS, the NetWare community's long-awaited license management product that supported LS API, out of field testing.

Officials from WordPerfect, the Novell Applications Group, said last week that the company did not know if, when, how or whether it would deploy the LS API in its desktop applications.

Microsoft Corp., one of the original architects of LS API, said it now has no plans to place the technology in any of its products.

What went wrong

Sources close to LS API development at vendor sites said agreement broke down over LS API for a number of reasons. First, the vendors never agreed on the management specification. At the same time, Microsoft and Novell were preparing to deliver competing systems management products based on different technologies.

Microsoft's technology is drawn from Digital Equipment Corp., while Novell's technology is Unix-based, drawn from Gradient Technologies, Inc., based in Marlboro, Mass.

In addition, LS API no longer has an industry institution championing it. Microsoft and the Software Publishers Association have largely abandoned the specification after playing major roles in gaining vendor support for the API.

"For users, this leaves situation normal," all moseyed up," said Priscilla Tate, executive director at Technology Managers Forum, Inc. Tate was a director at the Microcomputer Managers Association, which initiated the LS API specification when it published its licensing white paper in October 1991.

"We know different vendors had different distribution strategies then," Tate said. "There are still as many ways to license software as there are software publishers. We're still paying more for software, and vendors still don't want to pursue the cost of metering."

**ARE PCs A BETTER BUY
THAN X TERMINALS?
FIND OUT BY READING THIS
FREE REPORT.**



Call
1-800-547-8949
to get the free inde-
pendent study compar-
ison report.
Cost
of
X
terminals.

You want to make your network as productive as possible. That means bringing all kinds of information to that network.

But you're not sure what gets the job done in a more cost-efficient manner—PCs or X terminals.

Simply looking at the purchase price alone could prove to be a costly mistake. Because you need to compare the total cost of ownership—the investment in hardware plus administrative expenses.

The good news is such a comparison exists.

And it could save you thousands of dollars. It's called the "Cost of Ownership" report, an audit conducted by an independent research organization.

This detailed report comparing ownership costs of PCs and X terminals is yours free for the asking.

Call 1-800-547-8949 Dept 541 for your free 16-page report
or send e-mail to TekXpress@orcawtek.com.

Use this report to decide what's right for you and your environment.



Always anticipating your needs.

© 1991 Tektronix, Inc. Tektronix is a registered trademark of Tektronix, Inc. All other trademarks are the property of their respective holders. 1000-40

Tektronix



With all the hype surrounding business programming, one thing has been conspicuously absent: the facts.

No matter how you slice it, COBOL means business programming.

According to the Gartner Group 80% of all programmers today use COBOL.

That's right, COBOL. The language that some, shall we say, "unenlightened" industry pundits think has gone the way of punch-cards and vacuum tubes. The reality is, COBOL is more vital to business today than it ever was and at Micro Focus, we know why.

Versatility—We've made COBOL the most "open" system in the industry. Micro Focus COBOL programmers can target applications to DOS, Windows, OS/2 and literally hundreds of UNIX® environments (something that

current C, C++ and 4GLs only aspire to do). We've also added communications facilities and data access capabilities that make COBOL the ideal choice for developing client/server or cross-platform applications.

Performance—We've made COBOL scream. Applications written in Micro Focus COBOL run as fast as anything written in C or C++ and faster than most 4GL-based applications, too.

Productivity—We've made COBOL more productive than C, C++ and 4GLs by adding advanced tools like Animator™ for streamlining source code debugging as well as syntax extensions to handle graphical user interfaces,

file and record locking and other important functions. We've also brought the latest development facilities like Dialog System Professional™, our rapid application development tool for Windows and OS/2® Revolve™, our comprehensive system-wide analysis tool, and even object orientation, with our Object COBOL Option™.

Those are just a few reasons why programmers insist on Micro Focus COBOL for business application development. To learn more, call 1-800 MF COBOL and ask for our white paper: "COBOL vs. C."

Micro Focus. The past, present and future of programming.

MICRO FOCUS®

Micro Focus and Animator are registered trademarks of Micro Focus Int'l. Dialog System Professional, Revolve and Object COBOL, Open are trademarks of Micro Focus. Other trademarks are property of their respective companies. Graph based on Gartner Market Research Study ADCAZP (1991).

Client/server security is industry slacker

By Gary H. Anthes
HILTON HEAD ISLAND, S.C.

Concerns about security in client/server computing ranked just behind worries about getting a good time for 75 attendees at an information security manager's symposium here last week.

Users from a broad array of corporations and government agencies attending the MIS Training Institute's conference said they are cautiously making their way to client/server in part because of security managers' bewilderment about what is available in the glass house.

"It has slowed it down," said a security manager at a large insurance company. "But you can only hold your end users back so long."

Indeed, it is impossible to keep up with users, others said. "People are building applications on the fly, and one is checking on them. Auditors don't look at them," said Wendall A. Reimer, information systems and data processing security supervisor at 3M Co. "It's

a huge issue."

Reimer said 3M is attempting to deal with that by establishing an architecture in which security is tied to the corporate data that feeds the distributed applications rather than to the applications themselves.

He added that 3M's move to client/server has increased the security work load in departments without offsetting savings centrally. "We've done 30 to 40 client/server applications and nothing has gone away from the mainframe," Reimer said.

Gary S. Lynch, vice president of information security and risk management at The Chase Manhattan Bank

NA in New York, said client/server security solutions tend to be "tactical and platform-specific." Vendors have a long way to go before mainframe-strength security is available, he added.

But Lynch noted that Chase, another bank and a manufacturing firm are experimenting with a new concept that may give them added clout in getting vendors to respond to their demands for greater security.

Lynch said the three companies are attempting to convince two major software vendors that specific security weaknesses in their products may carry legal liability for the vendors if users suffer security breaches as a result of the deficiencies. For example, in one "compliance recommendation," Chase wants a major product to include a systemwide, nondeletable time-out feature that would lock up an application after a certain period of inactivity.

Lynch said the new groupware products also present special security challenges because they have their own security features that end users can implement in different ways, making central control very difficult. "Groupware scares me because we introduce it as a small pilot, but pretty soon it catches on and we have enterprise-wide," he said.

Kenneth J. Cutler, a vice president at the Information Security Institute in Framingham, Mass., said companies moving to client/server often pay a great deal of attention to availability and neglect other aspects of security such as password management.

"They tend to get security-conscious after they get burned," he said. "Shooting yourself in the foot is an incredible attention-getter."

Securing the mixed bag

Awest Technologies in Rockville, Md., last week launched a set of security management products that will target customers with a mixed bag of client/server systems and no single method to safeguard them.

"I think it's an afterthought," said Chet Geschkecker, vice president at Harwitz Consulting Group, Inc. in Watertown, Mass., of security in client/server

environments. "With all the seduction with development tools and the general tone of informality, security has been overlooked."

Axent, a division of Xerox, Inc., said its OmniGuard product set can operate from a single point of control, such as a Unix-based workstation, and rely on agents designed for other platforms to report back information on the different operating environments.

The computer technology group at Mobil Administrative Services Co. has tested the OmniGuard product for an environment that includes Novell, Inc.'s NetWare, Digital Equipment Corp.'s OpenVMS and "Unix in several flavors," said Paul Styrsky, a senior auditor. So far, his staff has been impressed with OmniGuard's consistency.

The software is scheduled for shipment in October. It can be licensed as a full-suite or by individual modules, which start at \$1,995. Agents will sell for \$395.

— Rosemary Cafasso

Start-up builds Clipper chip substitute

By Gary H. Anthes
GLENSIDE, PA.

When Vice President Al Gore recently called on the industry to develop a software-based alternative to the controversial Clipper encryption chip, Clipper opponents hailed the move. But some observers wondered if software developers would rise to the challenge.

As it turns out, tiny Trusted Information Systems, Inc. (TIS), based here, had already quietly developed a software alternative. Company executives claim it could overcome many of the objections to Clipper (see story at right).

Demand may be high

The TIS system, temporarily dubbed Key Escrow Encryption System (KEES), is not yet commercially available. Industry observers expect, however, the system will find uses outside government walls and inside corporate ones once it becomes a product.

The encryption system would al-

low a company to decode its encrypted files and messages using keys stored by a corporate agent — even when an end user has lost the original encryption key.

"If you are a large company and you protect your E-mail or files on a widespread basis and someone loses the key, there is no way to get it back," says TIS President Stephen T. Walker. "This software is an insurance policy. If something goes wrong, you can get it back."

Unlike the Clipper chip, the TIS system is based entirely in software and can be used with any encryption algorithm. Walker said, Clipper uses a secret algorithm called "Skipjack," developed by the National Security Agency (NSA).

TIS has accepted the challenge put out by the White House, said Lynn McNulty, associate director

for computer security at the National Institute of Standards and Technology (NIST). "The NSA-developed chips are one solution, if anybody's got a way to do it differently, we're willing to listen."

McNulty and other officials from NIST and NSA have seen a demonstration of the TIS system, but McNulty cautioned it has not been evaluated in any detail yet. However, "Steve [Walker] has put together what appears on the surface to be a very viable solution," he said.

McNulty said no one knows how much demand there is outside the federal government for key-escrow encryption. "But some of the major corporations are increasingly becoming nervous about the ability of employees to encrypt data stored on desktops," he said.

TIS President Stephen T. Walker: KEES is an insurance policy

KEES could be key

An independent developer of the Clipper chip substitute, Trusted Information Systems (TIS) is looking for partners to help build a software-based alternative to the controversial Clipper chip. TIS claims its software will have less overhead and less latency than the Clipper chip, and will be more secure. TIS is also developing a software-based key escrow system that will be able to handle the growing number of key escrow requirements.

But users and vendors reportedly object to the government's key-escrow initiative, saying it will lead to privacy violations.

At a congressional hearing, TIS CEO Steve Walker said the Clipper chip, based on the NSA-developed Skipjack algorithm, is too slow and unreliable for widespread use. "The NSA-developed Skipjack algorithm is not a good algorithm," he said.

Walker said TIS's KEES system, developed by the company's chief cryptographer, Lynn McNulty, allows the NSA-developed Skipjack algorithm to be used in a more efficient and reliable manner.

Walker said TIS's KEES system is designed to be compatible with existing software and hardware, allowing users to switch between the two systems easily.



"ALL THIS TALK ABOUT PARALLEL AND THEY STILL CAN'T GET IT STRAIGHT."

Both Companies Have It -
But Only One Has Parallel Processing

	ORACLE	SYBASE System 10
Parallel Processing Strategy	YES	YES
Parallel OLTP Software	YES	NO
Parallel Index Software	YES	NO
Parallel Backup	YES	NO
Platforms Supported with Parallel Software	20+	1

Oracle's parallel database software makes open system computers twice as reliable as mainframes. Call Oracle for the software. Call Sybase for the hardware.

ORACLE
www.oracle.com

PARALLEL ISN'T THE ISSUE, PERFORMANCE IS.

Sybase supports thousands of simultaneous users running mission critical applications—with only a fraction of the hardware Oracle requires. In fact, Sybase's price/performance beats that of *any* vendor on *any* platform in TPC/C benchmarks—a true client/server benchmark for OLTP and decision support. No wonder Oracle hasn't even attempted it. So you can see why 86 out of the top 100 Fortune "500" companies have chosen Sybase. For the truth about Sybase's price/performance leadership, call us for the TPC/C benchmark results. 1-800-SYBASE-1, ext. 6010.

SYBASE
PEOPLE BET THEIR BUSINESS ON US.

Ability to manage desktop assets to gain ground in '95

By Elisabeth Horwitz

The desktop asset management industry is every bit as fragmented as other network management niches — and just as sluggish to agree on standards.

The downside for users is that they must either write their own scripts to manage their mix of PC assets or wait for the leading network and systems management companies to get there.

Fortunately for users, a number of product introductions — from the fall through next year — promise to extend the management domain of leading platforms across a broad range of PC systems. They include the following:

- Hewlett-Packard Co. plans in 1995 to announce a suite of applications under its OpenView network management platform for managing PC software assets and configurations. The suite will include distributed computer administration, configuration management and software distribution. It will be linked to other applications via HP's data repository architecture, Meta-Schema, which

was announced last week.

The application will manage Microsoft Corp. operating systems, probably via the Hermes system management software, as well as a range of Unix systems, HP said.

- IBM's NetView for OS/2, slated for release this fall, will include an asset management module that automatically collects configuration information from the following systems: Novell, Inc.'s NetWare, IBM's LAN Server and OS/2, and Macintosh and Windows machines, an IBM spokesman said.

- Trivit Systems, Inc., OpenVision and Computer Associates International, Inc. have said they will port their software configuration and systems management products to Windows NT by 1995, allowing users to manage NT and Unix from the same console [CW, June 25].

- Microsoft's Systems Management Server (SMS), due in October, can manage hardware and software on PCs with its distributed software to DOS, Windows OS/2 and Macintosh clients. It can also troubleshoot problems across a variety of networks and offers a help facility allowing LAN administrators to walk remote users through

hardware and software problems.

SMS has its own SQL-based database that serves as a repository holding configuration and installation information on PCs spread across different networks. SMS will feed into HP's OpenView and IBM's NetView/SMDS/OS/2 and Macintosh and Windows databases.

- Frye Computer Systems, Inc., will host its popular Software Update and Distribution System (SUDS) to HP's OpenView shortly and provide broader management of Unix systems later this year. Frye began shipping in April a distributed wide-area network version of SUDS, which is said to propagate updates across geographically-distributed servers.

- The Desktop Management Task Force's Desktop Management Interface (DMI) could potentially offer a consistent way for management consoles to collect information across a broad range of desktop hardware and software systems. Unfortunately, few leading desktop vendors have committed to support DMI to any specific time frame.

Senior editor Ed Seagull contributed to this article.

PC tracking

CONTINUED FROM PAGE 1

install and specifically configure operating systems and applications that take best advantage of a PC's current hardware assets across multiple environments.

"IS does not view their solution as having IBM here and Microsoft there. They view it as an IS problem that needs a specific IS solution and not a bunch of vendor-specific solutions," said Jerry Schneider, president emeritus of the D.C. Capital Users Group and head of Schneider Associates in Burke, Va.

While vendors have been slow to come out with standards for tracking and controlling PC assets, the platform vendors are planning to announce proprietary solutions next year that will manage a broad range of PC operating system environments (see story above).

Method of distribution

Vendors have provided part of the answer with products such as IBM's Distribution Manager and Configuration, Installation and Distribution (CID) packages, which allow managers to automatically distribute a software update or new package to multiple PCs.

"Software distribution products like CID are critical to us. I have taken my in-

stall time for OS/2, a NetWare Requester and [IBM's] Communications Manager from several hours down to one hour per workstation," said Doug Strock, a LAN administrator at Dow Corning Corp. in Midland, Mich.

Unfortunately, such a cookie-cutter approach to distribution does not work in the common corporate scenario, where PCs differ widely in terms of hardware and network driver configurations as well as type and version of operating system and applications installed and analysts and users said.

The way to solve this problem is to keep the distribution package to an asset manager that tracks and stores up-to-date information on each PC's hardware, software, networking and operating system configurations. This would enable, for example, an IS manager to tell the system: "Distribute Microsoft Word Version 6.0 to all those PCs that have Version 5.1 and the memory to handle 6.0."

An automated, centralized software management system "is a requirement for a company with more than 100 users," said Ted Vegvari, a network design specialist to Torrance, Calif., who works with a number of major corporations. to

addition to eliminating a hefty amount of LAN administration grant work, such systems can help IS departments implement some degree of consistency across PC configurations.

Third-party vendors such as Frye Computer Systems, Inc. in Boston and Brightwork Development, Inc. in Tinton Falls, N.J., provide proprietary packages that perform all of the above, primarily at the departmental LAN level.

What is still missing is the link-in to an enterprise management system, which would provide IS managers with the ability to perform a range of management applications across multiple environments, said Bill Kirwin, an analyst at Gartner Group in Stamford, Conn.

Fortunately, vendors are promising to provide that. Martin Marietta Corp., for example, looks forward to using HP's OpenView as a

single window into LAN and internetworking installations via Simple Network Management Protocol (SNMP). It also plans to manage Microsoft desktop installations via Microsoft's Systems Management Server (SMS) — also known as Hermes — and SMS feed desktop information to OpenView, said

DEC extends All-In-1

By Lynda Radosevich and Mary Brandel

in an attempt to hold on to customers and provide a migration path to client/server computing. Digital Equipment Corp. last week quietly began shipping All-In-1 3.1.

The revision permits users to run their All-In-1 applications intact on Alpha AXP systems and in key to a big chunk of the installed base. However, Digital is expected to continue to lose customers to popular LAN management systems.

For the nearly 5 million users of All-In-1, Digital's aging minicomputer-based management and office automation software, the question is where to go from here.

Up to 80% of the All-In-1 installed base is looking to update the office system, according to analysts. Many are moving to LAN systems using Microsoft Corp.'s Mail or Lotus Development Corp.'s CCMAIL for messaging.

"We're going off our own strictly because we want a PC-based solution," said Doug Weiler, manager of advanced technology and architecture at Westinghouse Savannah River Co., a large All-In-1 site in Aiken, S.C. Westinghouse is migrating to Mail, Weiler said.

Hardware help

The Alpha AXP support allows users to replace VAX hardware without disrupting the software. Such a scenario will be attractive to 20% to 25% of the installed base, estimated David Whitten, an analyst at Gartner Group, Inc. The advantage is improved performance and lower cost of ownership.

For instance, for the VAX 6410, the five-year cost of ownership is \$15,456 per user, whereas for the AX32, it is \$5,20. The savings are to reduce floor space, power consumption and maintenance costs, said Steve Martin, a Digital marketing manager.

Features in All-In-1 3.1 include a redesigned mail server that is X.400 P5-compliant so it can interoperable with other X.400 mail systems and enhancements in systems management and terminal user functions such as print preview.

Frank Belland, senior communications consultant at the Atlanta manufacturer.

Such Unix-based management platforms as OpenView and IBM's NetView/6000 have the scalability and range of management applications to enable "the guy who sits at one console to do data center to manage all LANs plus the SNA network plus the internetwork," down to the desktop level, Kirwin added.

Support central

In addition to putting more control of PC configurations in the hands of IS, such products would potentially reduce total computer operations head count as corporations move from distributed departmental LANs, each with its own administrator, to a more centralized LAN support approach.

Hermes could give Microsoft some added leverage against its competitors on the desktop because it promises to work hand-in-glove with the Registry that is built in Windows 4.0, code-named Chicago. The Registry provides Hermes with highly specific information about the hardware and software on an individual PC.

"Like Chicago for all the implications it has for LAN and network management things like distributing applications. You can stick that data up through Hermes," said Warren Smith, a certified public accountant in the auditing department at Pacific Bell in San Ramon, Calif.

HP spins out OpenView 'Tornado'

By Steve Moore
ORLANDO, FLA.

Twisting the tails of its foes in the escalating network and systems management conflict, Hewlett-Packard Co. last week spun out a distributed management initiative code-named the Tornado Project.

But the HP announcements regarding this next generation of the OpenView network management platform were not substantive enough to win over competitors or persuade fence-sitting users to race to OpenView, analysts said.

"Since the next-generation version of OpenView is unlikely to appear before mid-1995, the Tornado Project is in a marketing exercise to make customers and independent software vendors aware of HP's transition plans," said Tom Willmett, a vice president at Aberdeen Group in Boston.

While users at the OpenView Forum held here last week praised the company's overall strategy and its expanding roster of partnerships with other vendors, they clamored for product specifics and timetables that HP executives declined to provide.

Users looking for support

"I think HP has a good basic platform, and now that they're getting Cisco and all these other people to write products to it, I think it'll become the dominant platform in the network management environment," said Bill Bryan, network manager at El Paso Natural Gas Co. in Midland, Texas.

Bryan and other users pointedly noted, however, that HP must establish new beachheads by supporting additional protocols, such as Novell, Inc.'s IPX, and additional operating system platforms such as Microsoft Corp.'s Windows NT. HP executives said IPX and NT support will emerge next year as part of the Tornado Project.

Among the features HP promised in the Tornado Project are the following:

- A common data repository that can be shared by multiple network and systems management applications. It will be based on HP's newly announced OpenView Meta-Subschema, which is a specification for a consistent method developers can use to store information used by their applications.
- Distribution of user interface processes so multiple operators in different sites can access the same OpenView displays.
- Support for Version 2 of the Simple Network Management Protocol (SNMP).

For Sudhir Rahman, a senior network engineer at DHL International in Singapore, SNMP Version 2 was good news. But he said that as his international network grows, he will need additional features

such as support for the Japanese language in OpenView's user interface.

While applauding HP's promised OpenView enhancements, users asked for improvements to OpenView's network discovery and mapping features, its report generation capabilities, its support of leading relational database

management systems and its ability to use SNMP Remote Network Monitoring (RMON) data.

"I've been looking for something on the reporting side to make OpenView more friendly for upper management," Bryan said, noting that while promised enhancements to HP's NetMatrix products

may do just that, he needs more time to evaluate those and other LAN analysis products.

"I'd like to have OpenView give me a complete picture of all my analyzer data and RMON data," said Edgar Pimental, a network manager at Electronic Data Systems Corp. in Flint, Mich. "If I could integrate all that data into an object-oriented database and have OpenView access it with a nice user interface, that would be neat to see."

SPF/PC v. 4.0



Wait no longer! Put ISPF-style Dialog Management Services and PDF on your PC now with this new version of SPF/PC!

- Full ISPF/PDF Compatibility
- Modifiable Panels
- Table Services
- UNDO/REDO
- Enhanced REXX Support
- SUPERC File Compare
- COBOL Workbench Integration
- Optional *COBOL Source Analyst**
- Windows 3.x/NT Compatibility
- DOS & OS/2 32-bit executables
- Over 20 other NEW features!
- Corporate Pricing/LAN version

Order this powerful new version of SPF/PC today and see why over 300,000 programmers have made SPF/PC their tool of choice!

Become more productive on your PC immediately with a tool you already know how to use!

Hurry! Savings end August 31, 1994.

LIMITED-TIME SAVINGS

New Copies	\$199
Now thru Aug. 31, 1994	\$199
Upgrades after August 31, 1994	\$295
Upgrades- with proof of license	\$59
Now thru Aug. 31, 1994	\$59

Upgrade prices after August 31, 1994	\$295
Upgrades from SPF/PC v. 3.0	\$295
Upgrades from SPF/PC v. 2.0	\$75
Upgrades from SPF/PC v. 1.0	\$49
Upgrades from older versions	\$49

**Call: 800-336-3320
Fax: 510-521-0369**



Command Technology Corporation
1040 Maries Village Parkway
Alameda, CA 94501-1041

New Version!

SPF/PC and CTC are registered trademarks and COBOL Source Analyst is a trademark of Command Technology Corporation. All other products are trademarks or registered trademarks of their respective owners.

Viasoft's VIA/Alliance helps decipher legacy code

By Melinda-Carol Balloue

"How do I get there from here?" is a dissenting question for information systems departments pondering how to move millions of lines of legacy Cobol code to client/server computing.

Even the notion of changing system codes for the year 2000 can be an alarming prospect.

"This is a big concern of ours," said Bob Wootton, a systems software engineer at Unum Life Insurance Co. in Portland, Maine. Wootton's organization needs a five-year lead time for some applications, requiring the date change. "We need to figure out what [code] we have, what needs to be changed and how it affects other applications. A group within the company is checking out tools [to do that] right now."

So far, few tools exist to help companies detail and automate this process. But a new offering from Viasoft, Inc., dubbed VIA/Alliance, may be able to help Cobol and MVS software.

VIA/Alliance lets developers examine both source code and Job Control Language (JCL) to perform impact analyses on code.

Companies switching from traditional environments to client/server systems must be able to inventory code and understand the relationships between existing legacy applications, analysts said.

"It's critical for any [information technology] organization to know and understand what they have and where they are [in order] to include that in their plan for where they want to go. This will main-

tain the amount of new development they need to do and let them maximize reuse of existing applications," said Kevin Schick, an analyst at Gartner Group, Inc. in Stamford, Conn.

Yet code-impact analysis is one of the most time-consuming and error-prone tasks related to maintaining code, analysts said.

Mapping it out

VIA/Alliance's ability to provide access to JCL allows users to know which programs are being executed in which sequence and which sets of code are being used across systems. It essentially provides a road map for how legacy applications are put together — exactly the sort of information required for maintaining, re-engineering and/or reusing code.

VIA/Alliance offers a complete set of cross-references supports that developers can use to create detailed reports on the existing applications. It also puts all the information into a DB2 database, enabling developers to track their systems.

"This provides a baseline that most organizations don't have today," said Bill Ulrich, a consultant at Tactical Group, Inc. in Apton, Calif. "I talk to companies who are trying [figure out code relationships] by hand."

VIA/Alliance is integrated into Viasoft's Existing Systems Workbench and can be used in conjunction with Viasoft's other re-engineering tools. Prices start at \$45,000. VIA/Alliance will be part of a Viasoft thrust next year into more mainstream, high-end client/server development, company officials said.

Lotus teams up with Intel

ProShare software will be integrated into Notes

By Lynda Radosevich

Lotus Development Corp. will integrate Intel Corp.'s ProShare desktop conferencing software into Notes, the two companies announced last week. The move should help Lotus fill a key hole in Notes, which lacks real-time conferencing analysis said.

ProShare, conferencing software that shipped in January, permits two users connected over a dial-up line to work simultaneously on a shared whiteboard or the same electronic document. With the addition of Intel's ProShare video system and integrated Services Digital Network (ISDN), it also lets users see one another on a video screen.

AT&T Corp. is working with Intel to integrate AT&T's data and desktop videoconferencing line. It also is working with Lotus to develop a public Notes network and may play a key communications provider role, Intel said.

Due next year

Lotus said it will give ProShare a Notes interface by late next year. Lotus also will integrate ProShare into Notes so that the products have a common name and address book and the same mode setup. Users will also be able to launch a ProShare conference from within Notes.

David Harter, chief operating officer at Bertram Communications, Inc. in Dallas, said potential benefits include being able to launch a conference from within Notes and using the Notes/ProShare combination to play video clips during a

real-time meeting.

Lotus said the ProShare arrangement fits into its strategy for Video Notes, a server that will compress, store and manage memory-intensive video files in a separate server. Video Notes is slated for early 1995 delivery. It will store and manage saved copies of ProShare conferences and serve video images to users in a conference, according to Peter Kranie, director of Notes Companies

Not ready for prime time

Desktop videoconferencing may not be mature enough for users interested in ProShare

Obstacles to widespread adoption of desktop videoconferencing



Source: Forrester Research, Inc., Cambridge, Mass.

Products marketing

Intel officials also said ProShare will support multiple users next year. ProShare costs \$60 per user for a shared whiteboard, \$250 for application sharing and \$2,400 for the full video system. Large discounts are available if ProShare is purchased from an ISDN provider. Lotus said it expects its Notes/ProShare offering to be priced roughly the same.

Lotus releases SmartText 3.0. See page 54.

Team IS up at bat

CONTINUED FROM PAGE 1

computers at their sites and at service bureaus such as Ticketmaster Corp. will be well prepared for that task with software designed to handle weather-related game cancellations.

IS directors in both the American and National leagues had said they hoped player and management negotiators would avoid the strike that began Friday. Players oppose a team salary cap proposed by team owners and used in other professional leagues such as the National Basketball Association. Owners claim that exorbitant compensation is threatening the existence of many teams.

Anticipating the walkout, which will benefit many of their daily computing routines such as tabulating game results and player performance, baseball's IS shops were fast formulating game plans to focus on projects aimed at creating less costly and more productive operations. Baseball is half off ball game IS expenses — the Kansas City Royals still handle ticket sales mostly — and modernization would help alleviate some of baseball's financial burden, IS chiefs said.

Change of plans

For the Minnesota Twins, that could mean picking up the pace on projects such as enhancing communication lines on an electronic ticketing system, said Sherry

Rood, director of IS for the team.

Minnesota is the only major league team that sells tickets through electronic kiosks. IS had planned to wait until the baseball season ended before replacing the 9.6K bps/line, data lines that connect its 30 kiosks in Minneapolis-area supermarkets to an IBM AS/400 with faster 56K bps/line, lines.

The financial strain is especially severe for small-market teams such as the Pittsburgh Pirates. The team plans to use the strike time to continue evaluating a possible shift from its 486-based Novel, Inc. NetWare LAN system to a Microsoft Corp. Windows NT-based workflow environment. The NT system would use Lotus Development Corp.'s Notes groupware, electronic forms and Microsoft's SQL Server.

Boosting creativity

Sanjay Chakraborty, IS director for the Pirates, said the team would use the new system to better integrate sales and marketing operations with ticketing and logistics. This would aid the team's creativity in special promotional campaigns, he explained.

The Oakland Athletics were begrudgingly eyeing similar opportunities.

"A strike hurts everybody in the community, especially the little guy whose business depends on the [local team]," said Ramon Sevilla, the Athletics' computer operations manager. But in Sevilla's IS shop, the silver lining in the strike cloud would be the opportunity to bring two major software upgrades to the

team's Hewlett-Packard Co. HP 3000 minicomputer: replacing its Turbolinux database with ImageQL and replacing MPE/iX 4.0 with the recently released MPE/iX 5.0.

Down the coast in Anaheim, home to Oakland's interstate rival, the California Angels, IS thoughts were also turning to head starts on other projects.

Heavenly descent

The Angels are in the process of downsizing from an AS/400 to an IBM 486-based NetWare LAN. The team has already shifted ticketing operations off the AS/400 and will eventually move other functions, including tracking player injuries and player transactions, said Ron Moore, director of IS.

"We have a little more time to do some things we've been working on," he noted.

But while teams may have more time, the work stoppage could cost them money they will not have more money, and that could sap some of their best IS intentions, pointed out Jim Xiang, the Baltimore Orioles director of computer services.

"Most organizations are going to try to limit expenditures because their income will be cut off at the knees," he said. "So you'll have the quandary of not having the funds to do what you [have the time] to do."

If Xiang is able to get the funds to spread the Orioles' IS wings as he sees fit, he will embark on a project to upgrade the team's 386-based PC LAN to a 486 or Pentium level, he said.

Rightsizing? Think Before You Leap.



Rightsizing With Information Builders Gives You The Right Solutions With Minimum Risk.

If bringing decision support and development to more desktops is in your future, how do you best integrate existing mainframe systems with new client/server solutions? And what about the extensive retraining needed during the transition?

Before you leap into "Rightsizing", talk to Information Builders. We can give you the answers because we understand the mainframe, midrange and desktop environments you work with. And we have the expertise to get you to tomorrow, safely. Just as we've been doing with all the Fortune 1000 for the last eighteen years.

PRODUCTS THAT WON'T LET YOU DOWN

Our rightsizing solutions, FOCUS, the client/server 4GL and EDA/SQL, the universal data access standard, are practical. They let you phase in the new with the old at a pace and budget that's right for your organization.

FOCUS is comprehensive. It gives you all the tools you need for application development and decision support on any platform. EDA/SQL provides access to all data on any platform.

And, our Professional Services group can

provide a comprehensive program, from needs assessment to implementation and training to help you rightsize, cost effectively, and safely.

FIND OUT THE FACTS

Only Information Builders gives you rightsizing solutions that let you think about future possibilities, rather than create future problems. So, before you leap, find out about our proven solutions or attend a FREE Seminar...

CALL 800-969-INFO
In Canada call 416-564-2760

**Information
Builders**



Toshiba's ultra-convenient,
credit card sized Noteworthy™
PCMCIA expansion options
tailor your system to your
changing needs.



T4500CT



T4700CT



T4700CS

Toshiba notebooks combine
486 power with their renowned
TFT or STN color.

The inside story on flexibility and expansion.



Enjoy all the conveniences of desktop computing, and take all the essentials with you when you travel.

Get one computer that can meet your demands even when your demands keep changing. Desktop docking and PCMCIA expandability make Toshiba notebooks among the most versatile computers you can buy.

Replace your desktop system with a Desk Station IV™ for instant connections to your printer, mouse, full-size keyboard, monitor and network. Just snap in your Toshiba notebook and you have all the processing power, memory, and storage you need. No more swapping files back and forth; no more dual software installations.

The T4800CT and T4700C Series also give you two PCMCIA slots—a 16mm and a 5mm—that let you customize your system whenever you want. You can easily add memory and storage, install fax/modems, even become a node on the network. Choose from Toshiba's broad line of Noteworthy PCMCIA expansion cards, or more than 50 other compatible PCMCIA cards.

So when you decide to change computers, get the one that keeps changing with you. Toshiba.
Call 1-800-457-7777 for a dealer near you.

In Touch with Tomorrow
TOSHIBA

© 1995 Toshiba America Information Systems, Inc. All products indicated by trademark symbols are trademarks and/or registered by their respective companies.

Notebook availability woes open doors for Dell

By Michael Fitzgerald
and Balkummar Vijayan
NEW YORK

Dell Computer Corp. could find itself benefiting from the troubles of others as it steps back into the notebook market and readies new desktops.

Information systems managers con-

tacted about the recently shipped Latitude and Latitude XP [CW, Aug. 1] said they liked the notebooks.

"I'm impressed with [the products]," said Sarah Isley, team leader of Desktop Services at Burroughs Wellcome Co. in Research Triangle Park, N.C. She said the screen, weight and PowerBook-like keyboard layout were all pluses. The

pharmaceutical firm has purchased four XPs already and is evaluating them as an alternative to desktop computers.

Isley and other users cited availability troubles at vendors such as IBM PC Co. and Compaq Computer Corp. as one factor in Dell's favor.

Dell executives said the company can meet demand for the new products, de-

spite the woes of its larger brethren. If so, Dell could grab a foothold in the notebook market, despite its lengthy absence.

Dell has also adopted aggressive pricing for the new line. An active-matrix color or Latitude XP with an Intel Corp. 33/100-MHz DX4 chip and a 32MB-byte hard drive costs \$5,699, for instance, or approximately \$1,000 less than a high-end IBM ThinkPad 755C. Eric Harslem, Dell's product group senior vice president, said the company will be less aggressive in the future but wanted to reenter the market in an attention-getting way.

Version 3.1



IBM Personal Communications 3.270

Emulation

Make a list of everything an emulator should be. Then add a few more lines. With the IBM Personal Communications/3270 V3.1, you can have it all—and more. It's the most fully functional, most cost-effective emulator on the market. It even helps mask the complexity of your applications.

Now you can access the host mainframe from more locations, more efficiently and with more functionality than ever before. Running as a native DOS or Windows® application, IBM PC/3270 does more than merely allow PCs to emulate IBM 3270 display terminals, transfer files with the host, automate processes via the emulated APIs and function as a LAN gateway. With new connectivity enhancements, the IBM PC/3270 emulator is also quite a liberator. There's support for IPX/SPX (NetWare® for SAA), TCP/IP and enhanced Async support for out-of-office connectivity.

You'll also find new support for the latest technologies, like the latest modems (V32BIS and V42BIS) and PCMCIA. IBM PC/3270 supports non-IBM products too, including communications



Take a look at all that PC/3270 has to offer, and you'll see why it's the latest emulation sensation.

beyond

adapters, printers, MS-DOS® and most PCs. And low upgrade prices are available when upgrading from non-IBM (Attachmate®, DCA®, Wall Data®, etc.) or IBM 3270 terminal emulators.

To find out more, call 1 800 342-6672. In Canada, call 1 800 465-7999, ext. 999. With so many features, the PC/3270 is clearly greater than your average emulator.

expectation.



IBM and SAA are registered trademarks of International Business Machines Corporation. NetWare is a registered trademark of Novell Inc. MS-DOS is a registered trademark and Windows is a trademark of Microsoft Corp. DCA is a registered trademark of Digital Communications Associates, Inc. Attachmate and Wall Data are registered trademarks of their respective companies. © IBM Corp.

CEO Michael S. Dell says life at Dell has been a lot more fun lately, as the company bounces back from last year's painful notebook debacle.

Dell is also trying to formulate new standards for notebook components. Michael S. Dell, chairman and chief executive officer, said the company is working with AST Research, Inc., to create standard docking station connectors, floppy drives and other components.

He also said company business plans call for notebooks to make up 20% to 25% of its overall sales. Dell declined to say how long he expected this to take.

Desktop strategy

Meanwhile, Dell is readying a new series of its OptiPlex desktops, to be announced Aug. 22. The products represent Dell's bid to streamline its brand strategy, said one analyst briefed on the products, who asked to remain unnamed.

The OptiPlex line will feature enhanced Plug and Play capabilities, enhanced integrated drive electronics and memory management.

The highlight of Dell's planned desktop announcement will be a 90-MHz Pentium-based system with a 210MB-byte hard disk and a 14-in. monitor, which will cost \$2,799, sources said.

"Any company that sells a 90-MHz Pentium system for less than \$3,000 is bound to attract the interest of corporate users," predicted Jennifer Munson, an analyst at WorkGroup Technologies, Inc. in Hampton, N.H.

The new family will offer models starting with a 48-MHz 486DX version and topping out with the Peripheral Component Interconnect bus-based 90-MHz version. An entry-level system will cost \$1,400 for a 35-MHz 486DX processor with 4M bytes of memory, a 210MB-byte hard disk and monitor.

Client/Server Rapid Applications Development



The tough decisions aren't always made at the top. That's why it's important to empower executives and every *other* decision maker with the right information...at the right time... And that's also why the SAS® System is redefining the role of applications development, giving you a complete *enterprise information system* that taps directly into your organization's vast information reservoir.

Bring an Enterprise View to Every Desktop—Executive and Otherwise

With the SAS System, you can build custom-tailored applications in far less time, using fewer resources, than it takes to force-fit an off-the-shelf solution into your organization. And because the SAS System has its own built-in strategy for client/server, you can integrate data and applications from different hardware platforms into a single, company-wide information delivery system.

Build applications that incorporate pull-down windows...access to electronic mail...drill down, hotspotting, and exception reporting...and graphical display of critical success factors. Working hand-in-hand with these basics—out of sight but always at the ready—are literally hundreds of powerful, proven tools for virtually every decision support need: financial planning and modeling, corporate reporting, quality improvement, and much more.

Take 30 Days to See, and Decide, for Yourself

Let the SAS System help you reach the right decision about applications development, EIS, and every other issue important to your business. Call us now at 919-677-8200 for a free video preview...plus details about a no-risk software evaluation and upcoming SAS System business briefings.

The SAS System. The World's Leading Information Delivery System.



SAS Institute Inc.

Sales and Marketing Division
SAS Campus Drive □ Cary, NC 27513
Phone 919-677-8200 □ Fax 919-677-8223
In Canada, Phone 1-800-363-8397

SAS is a registered trademark of SAS Institute Inc.
Copyright © 1994 by SAS Institute Inc.



ORACLE COOPERATIVE APPLICATIONS. IN CLIENT/SERVER SOFTWARE,

In your quest to automate your business operations and move from legacy systems, you can't go it alone. Now with Oracle Cooperative Applications, you don't have to. By themselves

they are a complete suite of client/server software that automates all



your business operations, including financial, manufacturing, H.R., project control and distribution applications. More importantly, because of Oracle Cooperative Applications open API's,



NOT JUST AN IMPORTANT ADVANCE MORE A MAJOR CRUSADE.

the entire industry has rallied to build software and services that seamlessly integrate with our solutions. To see how Oracle Cooperative Applications



allow you to rapidly implement open, distributed solutions, call for the video-recorded proof. Witness a demonstration of an enterprise-wide client/server implementation, and hear why

winning companies are leading the crusade to Oracle Cooperative Applications.

Call 1-800-633-1071 Ext. 8172



ORACLE

Third-party service runs afoul of copyright laws

By Julia King

Legal experts are cautioning companies to closely scrutinize the fine print on software licenses in the wake of two court decisions that significantly broaden the definition of copyright infringement.

Specifically, attorneys said information systems managers should make

sure all license agreements explicitly authorize system access by third parties such as consultants or outside service contractors.

Prompting the alarm was the bizarre outcome of lawsuits involving MAI Systems Corp., a financially belea-

guered manufacturer of computer hardware and software in Irvine, Calif., and two independent service companies.

In suits brought by MAI, federal courts have ruled that the independents — Peak Computer, Inc. in Glendale, Calif., and Advanced Com-

puter Services of Michigan, Inc. in Bloomfield Hills — copied MAI's proprietary operating system when technicians booted up computers in the course of on-site diagnostic testing. When customers' computers were turned on and software loaded into RAM, copies were created and copyright laws were violated, the court said. Moreover, the court concluded that licensing violations also occurred because MAI's licensees allowed customers to use its software only for internal information processing, any use of MAI systems by computer service companies was unlawful.

"It's one of those oddball cases that happens, and yet it has tremendous practical consequences out in the marketplace," said Ronald Katz, an attorney at New York law firm Coudert Brothers.

"It's like saying that if you hold a page of a book in front of a mirror you're making a copy of it," he said. "It doesn't make any sense, but if I were an MIS manager, I'd make sure my licensees said I could designate agents to turn on my machines for the purpose of maintaining them."

Third class

The current market for third-party computer services totals about \$9 billion, according to trade association Independent Service Network International.

Hair loss

occurs as users complain the system is costing them time, not saving it.

Bags under eyes

take shape from long hours spent attempting to connect your wireless network and LAN.

Get it in writing

Last week, IS managers and software contract specialists said they were unaware of the court cases but that the implications were clear.

"We [also] have consultants work for us who certainly do need access," said Stan Radon, director of contracts and administration at Depository Trust Corp. in New York. "We automatically build in [to license agreements] that employees or other agents can use [our] software."

As independents see it, the MAI cases boil down to an attempt to squeeze out third-party service providers. After all, "You have to be able to turn a machine on to fix it," noted Claudia Betzner, executive director of Independent Service Network International, an Atlanta-based association of about 200 independent service companies.

MAI, on the other hand, maintains it is a matter of protecting intellectual property and unfair competition.

"We spent a considerable amount of money to develop diagnostics embedded in customer systems," MAI lawyer Eric Christensen said.

MAI does allow third parties to service its equipment but only after both the service company and user firm pay separate access and diagnostic fees to MAI and sign licensing agreements, Christensen said. He would not specify the amount of fees but said MAI has agreements with nine independent service companies.

MAI has about 7,000 active maintenance contracts on its machines; 3,000 to 7,000 MAI systems are maintained by third parties, he said.



[IMPLEMENT A WIRELESS DATA SYSTEM WITHOUT ARDIS, AND PROBLEMS WILL SURFACE ALMOST IMMEDIATELY.]

Worry lines

Start when connections between your computer and your wireless network fail.

Proven lines

appear as the hardware you've chosen for field workers proves difficult to use.

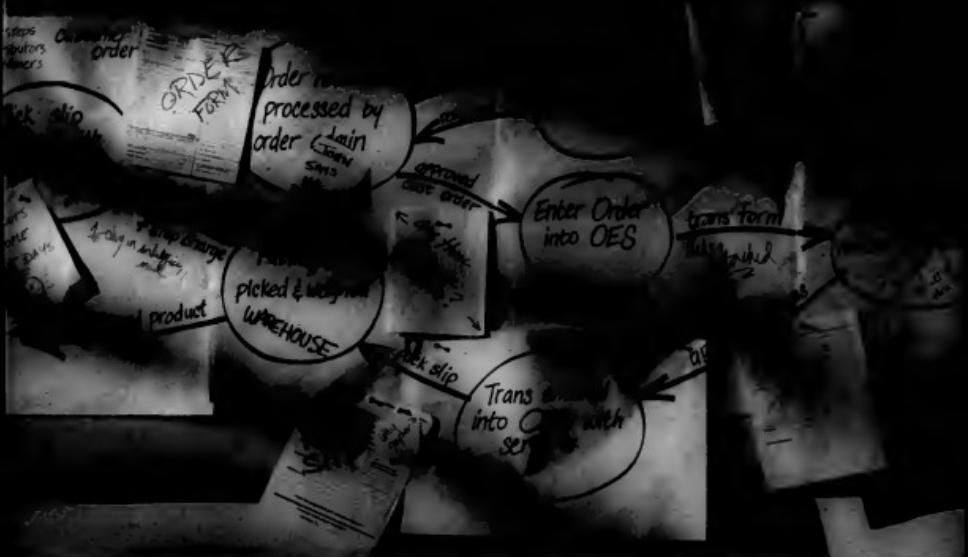


Bill Jones, MIS, age 38

New technology is never easy to implement. Period. And we don't intend to convince you that a wireless data system is any different. That's why you need ARDIS. > ARDIS has implemented more wireless data systems than anyone. We offer proven end-to-end solutions that include hardware, software, airtime, maintenance and training. > We handle everything — connectivity issues, software compatibility questions, even training difficulties. You're not forced to organize and work with multiple vendors, so your system gets installed on budget, in less time and with no glitches. > When you choose a wireless data network, go with ARDIS. And look wise beyond your years, not worn beyond them. For worry-free wireless data implementation, call 1-800-662-5328 ext. 200.

ARDIS

Real-time information solutions for real-life business problems.[™]



Reengineer your business without wallpapering your office.

New MAXIM.



To improve a business process, you first must understand it. And that means analyzing existing work flows and organizations and then evaluating new ones. Until today, office walls, whiteboards, and flip charts were the standard tools for business process reengineering.

Now MAXIM™ from KnowledgeWare gives you a whole new way of looking at the way you work. MAXIM is a Windows® tool that diagrams business processes and organizational structures — and captures the critical details behind them. So, for any task, you can see how long it takes, how much it costs, who's responsible, and the expected deliverables.

With MAXIM, you can quickly model today's processes and then reuse your work to develop "what if" scenarios. For real-life perspective, you can add copies of purchase requisitions, transaction forms, or other essential documents. Plus, MAXIM lets you export information to spreadsheets for further analysis.

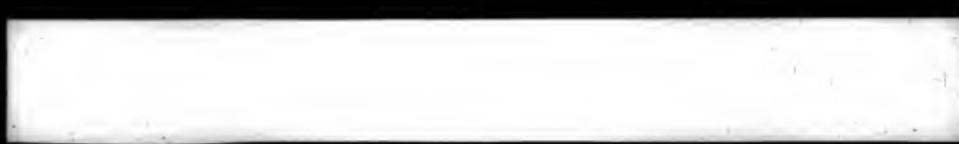
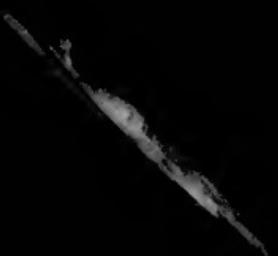
The bottom line? Perhaps for the first time ever, you and your colleagues can

identify the real trouble spots: black holes, miracles, redundant approvals, excess paperwork, misused resources, and missing steps. And if new application development is part of your plans, MAXIM's objects give you a head start.

Department managers, IS professionals, BPR specialists, consultants, CIOs — virtually anyone who manages or analyzes business processes — will benefit from MAXIM.

Whether you're interested in improving a single process or reengineering the enterprise, MAXIM can make an immediate difference. Available now at an introductory price of just \$249, MAXIM comes with 30 days of free support and a money-back guarantee. To order call 1-800-675-2100. It's the first step to successful business process reengineering. And it saves on tape and pushpins.


©1994 KnowledgeWare, Inc. MaxiM is a trademark of KnowledgeWare. All other trademarks belong to their respective holders.



EXTREME PROBLEMS DEMAND EXTREME SOLUTIONS.

KILLER SOLUTIONS FOR CLIENT/SERVER WORKFLOW FINANCIALS.

Although there are promising silver bullet solutions to even the most extreme financial management problems, believing that they go far enough in technology and functionality will leave you with lots of sleepless nights.

SOFTWARE WITH A VISION: INFORMATION VS. DATA

Like many Fortune 1000 customers of our 2nd generation client/server workflow financials, you have a strong vision for your business, your department, your job. You think today's applications should match all elements of your job, and deal with all forms of information. This should include data that's structured and unstructured, high-value and low value, stored or in-transit, inside applications or on the desktop.

It should also handle data in electronic, microfiche or source image form. You believe that these applications should do more than mere transaction processing and perform the business process tasks you perform. Like the 'walking' from desk to desk, the 'opening' of file cabinets, the 'reaching' into microfiche or printed report records. You know that this is the only way to get true competitive advantage based on total information management.

ADVANCED ARCHITECTURE FOR AN ADVANCED VISION

Only Computron delivers such 2nd generation client/server workflow financials, marrying advanced client/server technology and distributed objects with proven high-power functionality for every UNIX and legacy server, client and database (Oracle, Sybase, etc.). A recent survey by IDC lists Computron as one of the top five client/server accounting software companies in worldwide revenues. And we are the first to deliver high-impact technologies like workflow/image and COLD, while others are still talking about strategy.

So call about our "Killer" solutions or for our free white paper, "Financial Software... Client/Server and Beyond".

computron

FINANCIAL, WORKFLOW/IMAGE AND COLD SOLUTIONS

800-828-7660

IBM study spurs IS reevaluation

By Thomas Hoffman

■ Like a growing number of Fortune 500 companies, Union Pacific Railroad has strived in recent years to align its information technology capabilities with its corporate business objectives.

But even though the Omaha-based rail carrier made solid progress melding its technical savvy with its corporate mission, the company's information technology division still needs to communicate more effectively with the business units it supports.

"Clear and constant communications are essential when you're going through the type of [business process] transformation we've been experiencing," said Joyce M. Wrenn, Union Pacific's vice president of information technology and chief information officer.

This was just one of the dozens of findings that resulted from a value-based benchmarking initiative undertaken by 21 global corporations last year (see story at right). The study, conducted and funded by the IBM Consulting Group, compared the "best practices" of information systems or-

ganizational processes across multiple vertical industries, including financial services, insurance and manufacturing.

The results of the study underscore the need to improve the alignment of information technology with the overall business mission in most of the companies.

For some CIOs, the benchmarking confirmed their suspicions that some of their IT processes needed to be overhauled.

At StatOil, a Stavanger, Norway-based oil and gas distributor, the IS organization "had been very inward-looking and wasn't very customer-oriented," said Geir Pettersson, a senior vice president responsible for corporate information technology.

Pettersson said he got an earful about the weaknesses of StatOil's information technology services from corporate users prior to the benchmarking initiative. But the benchmarking results convinced him that StatOil's IS services needed improvement. "It was a confirmation of our gut feeling that we have a long way to go before we can consider ourselves satisfactory with services and customer orientation," Pettersson said.

Indeed, the benchmarking results

caused most participants to reevaluate their organization's IS operations and follow through on advice from their peers.

"The biggest area we discovered we were behind in was the strategic management of our human resources," said Roger Boerner, vice president of life insurance systems at United Services Automobile Association (USAA) in San Antonio.

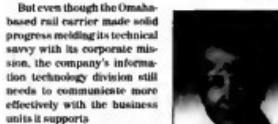
Going to night school

As USAA continues to explore client/server computing, the insurer has begun adding nightly seminars and courses on distributed processing "as a way of exposing [its staffers] to skills that they will certainly need in the future," Boerner said.

For Sherleen Q. Fryer, the benchmarking exercise enabled her to immediately appraise the status of Blue Cross/Blue Shield of Illinois' IS operations.

"One of the guiding factors we used to supplement the benchmark consortium was an internal customer sampling," Fryer said. "We basically told that one-third of our IS users were satisfied, a third were dissatisfied and a third were ambivalent."

So to better serve its users, Blue Cross/Blue Shield began tying user satisfaction in with IS staff compensation. "Having a good attitude and being a good listener doesn't cut it unless the deliverables are there," Fryer said.



Union Pacific CEO Joyce Wrenn says communication is essential

ISDN lures doctors

CONTINUED FROM PAGE 1

pharmacy PHS is concerned about retaining doctors because the pressures associated with health care reform have hospitals across the country locked in fierce competition for them.

"What differentiates us from our competition is the quality of our physicians. The problem is keeping them once we get them," said PHS network manager Mil Lively. He said he believes PHS will live or die by its ability to acquire, process and make data available to its users — particularly physicians.

Working together

By connecting doctors in the PHS network and giving them free access to its databases, the hospital hopes to make them feel like part of the PHS family, which in turn gives PHS an advantage over its competition, Lively said.

Simultaneous with the ISDN rollout, PHS will bring on-line a network of San Microsystems, Inc., Unix-based workstations with built-in ISDN capabilities. Called the Practice Management Computer System, the network will handle doctors' administrative tasks such as billing and record keeping.

Interestingly, hospitals and physicians are banding together to cut costs while offering a broad range of services. As of last week, three of northern Texas' largest nonprofit hospitals — PHS, Baylor Health Care System and Methodist Hos-

pitals of Dallas — were considering an alliance.

With roughly \$300 million in business last year, PHS is the second largest health care provider in northern Texas, behind Baylor, also based here.

"We've entered an era of incredible restructuring, which affects not only IS but everything hospitals do on a daily basis," said Steven Heck, chief operating officer at First Consulting Group, a health care consultancy in Irving, Texas.

Alverson agreed. "If you want any linkage in IS, you have to closely align your IS strategy with your business strategy, and you have to be able to move and adapt as the market shifts," he said.

With ISDN, PHS is heading down a different path than other health care organizations such as Exeter Health Resources, Inc., in Exeter, N.H., Allegheny Hospital System in Pittsburgh and Philadelphia and Johns Hopkins University School of Medicine in Baltimore, all of which have begun implementing Asynchronous Transfer Mode (ATM) networks. Exeter is also looking

into ISDN, but carrier coverage is insufficient for it to implement the technology now, [CW, June 20].

As for PHS, "We believe ATM is mostly hype at this time and is far too expensive and immature for us to consider seriously," Lively said.



PHS CEO Mike Alverson (left) and network manager Mel Lively recruit doctors with better network services

PHS recently completed its transition, begun in 1991, from a mainframe-based network to a client/server model, its four main locations in Dallas, along with more than a dozen medical clinics with over 5,000 employees, are linked via Ethernet

Service key

Among the findings of IBM Consulting Group's 1993 Best Practices Benchmark Initiative were the following:

- Service is considered the primary focus by 55% of participants.

- Information technology is being used to achieve dramatic cost savings by 65%, while 35% consider information technology a strategic weapon to accelerate corporate directions.

- Companies with a technological model or high-level view of the enterprise realized a 30% greater value in increased productivity and profitability, cost savings and better decision-making.

- Participants with a corporate-wide view of the importance of technology as well as senior management sponsorship are more satisfied with their technology investments and processes.

over fiber cable in a collapsed-backbone configuration with redundant Cisco Systems, Inc. AGB+ routers.

Now PHS' 95-member IS department is charged with expanding the network to include hundreds of new connections. With an annual IS budget of roughly \$12.5 million, these connections must be made as cost-effectively as possible.

The hospital currently has four T-1 connections to its major locations. Yet at \$1,500 to \$5,000 a pop, T-1 links in individual doctor's offices are out of the question. Lively said Frame relay was also deemed cost-prohibitive at \$360 per month.

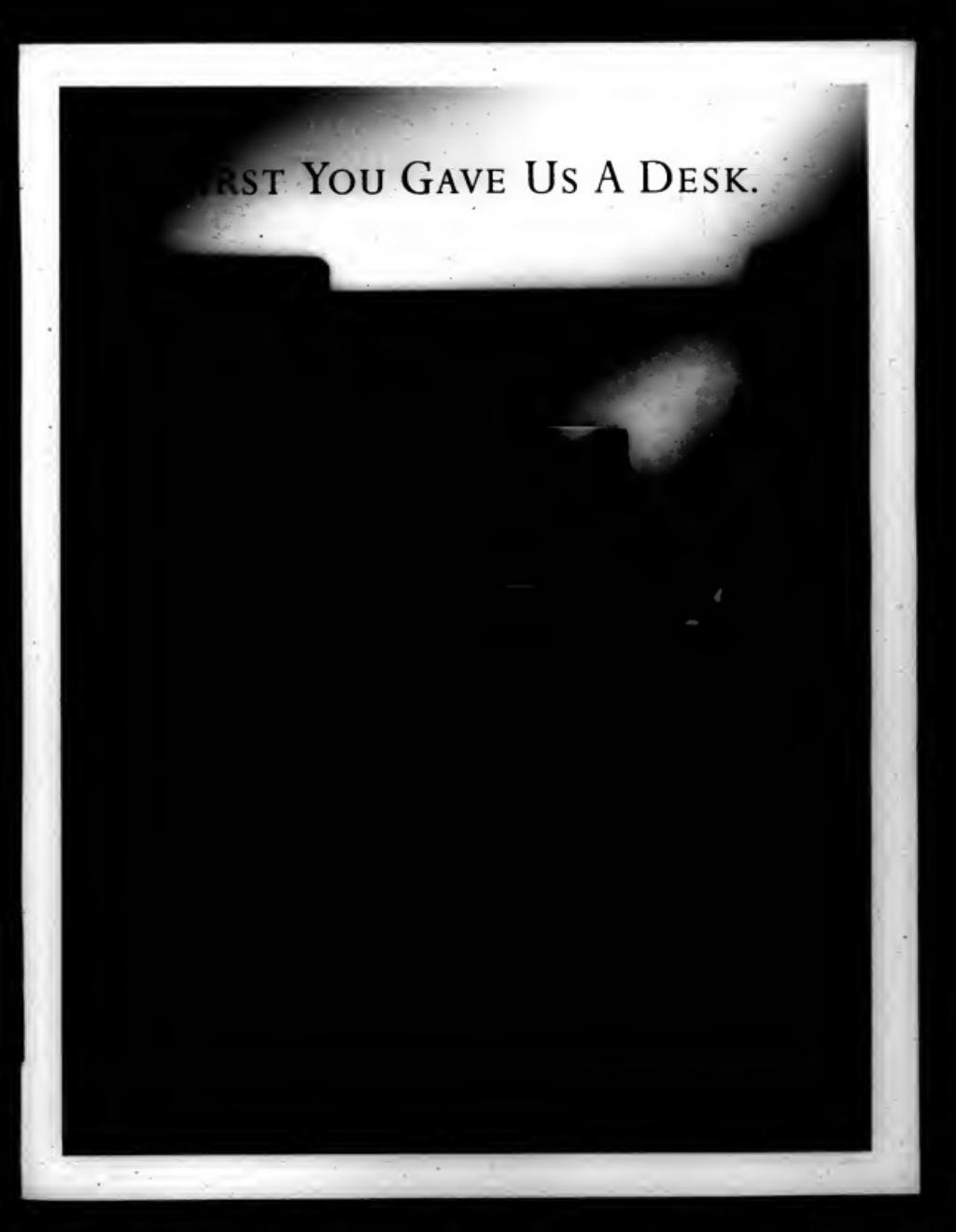
With providers such as Pacific Bell Corp., offering ISDN coverage for as low as \$15 per month, ISDN emerged as the technology of choice.

PHS made repeated requests to Southwestern Bell Corp. for ISDN coverage, which finally paid off. The telecommunications provider has installed ISDN switches that will serve Dallas, Houston and San Antonio starting Oct. 1.

After an installation charge of \$500 for each of the 10 Basic Rate Interface (BRI) links, Bell will charge PHS \$55 per month for each line. Lively said he expects that rate will eventually drop to as low as \$15 a month. The 10 BRI links will be combined in a \$1,500 Primary Rate Interface (PRI) ISDN line to PHS.

On the PHS side, Lively is installing a 544,000 Cisco 7000 router with a Multi-Channel Interface Processor card that supports two PRI connections. Cisco 2500 routers will be installed at the client end for less than \$2,000.

RST YOU GAVE US A DESK.



NOW WE WANT TO RUN

... your people rely
on you to keep working in your
business. That's why it's important that you're serious about
the best ways to handle information

As a leading PC company, we'd like to refer
you to another aggressive systems company: Compaq.
You may be aware, but last year we provided
the world's superservers.¹ That's because
our servers can actually outperform mini-
computers many times more, while delivering
unprecedented reliability. They can also radically cut
your maintenance costs.

Backed by partnerships with such
industry leaders as Microsoft and SCO, has
the broadest range of networking
products available. And Compaq offers

THE WHOLE COMPANY.

going to end up with small, compartmentalized

So Compaq's networking is designed to make the same ease of use we've brought to our desktops. Our CD-based SmartStart technology makes the most complicated part of the setup process as simple as possible. And our Pre-Failure Monitoring system makes configuring and fully managing your network a snap.

Our servers are built to withstand the rigors of being serviced. The Design for Reliability team keeps a close eye on 800 critical parts and uses our Pre-Failure Monitoring system to alert you to key performance parameters before they become a problem.

COMPAQ

Computer Industry

Briefs

Borland quarter up

Borland International, Inc. announced a surprise profit for the first quarter of the 1995 fiscal year. The company reported a \$61.4 million profit on \$69.1 million in revenue for the quarter ended June 30. This is compared with a \$6.2 million profit on \$125.4 million in sales for the same period last year.

Kendall posts 1065

Kendall Square Research Corp. in Waltham, Mass., announced a loss of \$6.5 million for its second quarter ended June 30, compared with a \$3.5 million loss for the same period last year. Revenue was \$6.7 million for the quarter, about the same as last year.

Stratus to buy TCAM

Stratus Computer, Inc. in Marlboro, Mass., has agreed to acquire TCAM Systems Inc., a New York- and London-based systems integration firm. Stratus will buy all outstanding TCAM shares for \$17 million. It could pay up to \$15 million more if TCAM reaches planned objectives in the next three years.

SHORT TAKES Statistical software developer SPSS, Inc., in Chicago said it will acquire Systat, Inc., in Evansville, Ind. Systat develops products for the scientific and engineering segments of the statistical market. ... United Parcel Service, Inc. in Atlanta has purchased a 19.7% stake in Connect Software, a software development and publishing firm in Redmond, Wash. Connect Software will work with UPS to develop Windows software for UPS' automated shipping and information systems.... Cisco Systems, Inc. in San Jose, Calif., has completed its acquisition of Newport Systems Solutions, Inc. for roughly \$60.5 million.... The Dow & Bradstreet Corp. has acquired a 4.9% stake in Management Group, Inc., a supply chain management software company.

Digital breaks up consulting unit

Reorganization splinters 6-month-old group; other departments absorb pieces

By Mary Brandel

First there was the "new Digital." Now there is the "newer Digital."

Last week, Digital Equipment Corp. dissolved its Digital Consulting unit, one of nine business units named when it reorganized the company just four weeks ago.

Had the plane been in place, the decision would have been part of the July 14 announcement, according to a Digital spokesman. But the company could not "keep wrangling around until every piece was perfect," he said.

Digital's reversal came after widely circulated reports that the unit was for sale. Additionally, some observers said the former vice president of the unit, Gresham Brebach, had proposed to purchase pieces of the business. Brebach is no longer at Digital.

Reorganization plan

Although no longer a separate body, pieces of the 14,000-strong unit will live on in the following ways:

• The largest piece by far, according to Digital, is the systems integration and technology consulting businesses. These will move to the Accounts Business unit, which

houses the direct sales force for the Top 1,000 Digital accounts.

• Network integration and training will be subsumed into the Multivendor Customer Services unit, headed by John Rando. That unit already does some network integration [CW, Aug. 8].

• Outsourcing and management consulting will be managed by Robert McNulty, chief information officer at Digital. He will report to Chief Executive Officer Robert Palmer.

The transition will be complete Jan. 1. No specific layoffs are included in the plan.

According to Digital, the move is partly intended to simplify systems integration services for its 1,000 largest customers. "Rather than having major customers called on by the account team, multivendor and Digital Consulting, we focused it more," the spokesman said.

But the rules are not black and white. Medium-size and smaller customers "can still get direct service from Digital," the spokesman said. "But more commonly, partners will do that business."

Even in large accounts: "it still may be better to broker a relationship with one of those other [partners]," he said.

Most analysts agreed the move is better

than a sale. "Unless DEC wants to become just a commodity hardware pusher, it needs a solutions capability," said Steven Milunovich, an analyst at Morgan Stanley Group, Inc. in New York.

Taking a step back

At the same time, observers said they see systems integration taking a buckshot.

"It falls right in line with their attempt to get focused, and the focus is on client/server hardware and the Alpha architecture," said Frank Romano, an analyst at Aberdeen Group in Boston.

He predicted there is a good chance Digital will simply phase these services out in the future.

However, in a recent interview, Palmer emphasized systems integration as a core competency.

The new systems integrator business will be vendor-independent, "but our strength is in Digital platforms," the spokesman said.

Analysts also said the change occurred because the \$2.5 billion business was not profitable. Digital's spokesman said that was "definitely not" the case. But clearly, consulting did not work as a separate unit.

"We've certainly learned some lessons in the past year with this business," the spokesman said. "I think we have the right balance now."

StorageTek will buy Network Systems

By Jean S. Bozman

Storage Technology Corp. said last week it would acquire \$215 million Network Systems Corp. in Minneapolis in a stock-swap deal by year's end. The move will give StorageTek control of networking software that will help the company broaden its reach into the client/server market.

The \$300 million deal, which will expand StorageTek's \$1.4 billion mainframe peripheral business, is expected to be completed later this year. It will also help StorageTek gain a foothold in the growing market of enterprise networks for PC LANs and distributed servers, analysts said.

The deal was approved by both boards of directors but still needs the approval of Network Systems' shareholders. StorageTek also acquired XL Datacomp, Inc., an IBM AS/400 reseller, in late 1991 for about \$160 million and Asperid Corp. in 1983 for about \$75 million.

Industry analysts said it was not surprising that StorageTek turned to an acquisition to expand its 25-year-old business.

"It's typical in a maturing market," said

Roxanne Googin, a vice president of research at Gruntal & Co. in Beverly Hills, Calif. "When the top line isn't growing, you grow by acquisition."

Network Systems, known for its Hyperchannel mainframe connector in the 1990s, sells channel extenders that link mainframes and peripherals. Now profitable, Network Systems had aging products and posted a 1992 loss followed by the acquisition of Vitalink Corp. in Fresno, Calif. The company bounced back after its 1993 acquisition of Internetworking firm ByteX Corp. in Westboro, Mass.

"Smaller companies need more strength in order to be able to survive in a very competitive industry," said Michael F. Ashby, president and chief operating officer of Network Systems. He said the firm's older technology will be replaced by mid-1995 as new products, including the Enterprise Router Switch (ERS), roll out.

A merger would formalize Network Systems' 25-year alliance with StorageTek, which links multiple StorageTek mission-critical for remote-site backup of mission-critical

data. StorageTek plans to use Network Systems' software to create products that link distributed client/server systems to networked data/storage banks.

"The ultimate goal is to get to a storage format that is completely independent of any computer system," a StorageTek spokesman said.

Joseph Payne, an analyst at Wheat First Butcher Singer in Richmond, Va., said the merger extends StorageTek's reach into distributed computing on enterprise networks. "There are a lot of marketplace that is static. Having a new partner on the network is a more relevant marketplace for the future," he said.

David Weiss, executive vice president of StorageTek's systems development, said Network Systems' software would allow his firm's tape libraries and Jobbing disk drives to store client/server data. ERS, due next year, will be added to a StorageTek product in two years, he added.

ERS is going to be the key for providing interoperability on the network," Weiss said. "We will use this to attach to any server or over any network."



FAX NO. 508-626-2705

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95* per year - a savings of \$8.00 off the basic subscription price.

First Name _____ MI _____ Last Name _____
Title _____ Company _____ City _____ State _____ Zip _____
Address _____
Address Shows: Home Business New Renew Basic Rate \$48 per year
* U.S. Only Canada \$95 Mexico Central/South America \$150 Europe \$295 all other countries \$295 Foreign orders must be prepaid in U.S. dollars

Please complete the questions below to qualify for this special rate.

- 1. BUSINESS/INDUSTRY** (Circle one)
10 Manufacturer (other than computer)
20 Wholesaler/Distributor
30 Retailer/Consumer
40 Medical/Pharmaceutical
50 Government/State/Federal
60 Business Service (except D/P)
70 Communications/Public Utilities
80 Transportation
90 Manufacturing/Processing/Refining/Agric.
100 Manufacturer of Computers/Computer
110 Related Systems/Software
120 Business Services/Computer Services
130 Consulting/Planning/Design Services
140 Manufacturing/Processing/Refining/Agric.
150 Manufacturer of Computers/Computer
160 Related Systems/Software
170 Business Services/Computer Services
180 Consulting/Planning/Design Services
190 Other

(Please Specify)

2. INTERFACtE (Circle one)

- MANAGEMENT**
11 Chief Executive Officer/
Chairman/Vice President/Asst. VP
12 Chief Financial Officer
13 Medical/Logic Accounting Mgr
14 General Manager
15 Director, Sales
16 Director, Marketing
17 Director, Product Dev.
18 Director, Research & Development
19 Director, Systems/Information Services
20 Director, Financial Services
21 Director, Manufacturing
22 Director, Production
23 Director, Quality Control
24 Director, Purchasing
25 Director, Personnel
26 Director, Engineering
27 Director, R&D
28 Director, Manufacturing
29 Director, Production
30 Director, Quality Control
31 Director, Purchasing
32 Director, Personnel
33 Director, Engineering
34 Director, R&D
35 Director, Manufacturing
36 Director, Production
37 Director, Quality Control
38 Director, Purchasing
39 Director, Personnel
40 Director, Marketing
41 Director, Product Dev.
42 Director, Research & Development
43 Director, Systems/Information Services
44 Director, Financial Services
45 Director, Manufacturing
46 Director, Production
47 Director, Quality Control
48 Director, Purchasing
49 Director, Personnel
50 Director, Engineering
51 Director, R&D
52 Director, Manufacturing
53 Director, Production
54 Director, Quality Control
55 Director, Purchasing
56 Director, Personnel
57 Director, Marketing
58 Director, Product Dev.
59 Director, Research & Development
60 Director, Systems/Information Services
61 Director, Financial Services
62 Director, Manufacturing
63 Director, Production
64 Director, Quality Control
65 Director, Purchasing
66 Director, Personnel
67 Director, Engineering
68 Director, R&D
69 Director, Manufacturing
70 Director, Production
71 Director, Quality Control
72 Director, Purchasing
73 Director, Personnel

DEPARTMENTAL MANAGEMENT

- 74 Director, Manufacturing
75 Medical/Logic Accounting Mgr
76 Director, Financial Services
77 Director, Personnel

OTHER PROFESSIONAL MANAGEMENT

- 78 Director, Computer Services, Education,
or Journalism, Students

or Other Professional

3. Do you use, evaluate, specify, recommend, purchase

(Circle all that apply)

Operating Systems

- 79 Macintosh OS

- 80 Networks

- 81 DOS

- 82 UNIX

- 83 NetWare

- 84 LAN

- 85 VMEbus

- 86 PC/XT/AT

- 87 PC/XT/AT

- 88 NetBios

- 89 NetBios/OS/Windows

- 90 NetBIOS

- 91 NetBIOS/OS/Windows NT

- 92 NetBIOS/OS/Windows 95

- 93 NetBIOS/OS/Windows 98

- 94 NetBIOS/OS/Windows 2000

- 95 NetBIOS/OS/Windows ME

- 96 NetBIOS/OS/Windows XP

- 97 NetBIOS/OS/Windows Vista

- 98 NetBIOS/OS/Windows 7

- 99 NetBIOS/OS/Windows 8

- 100 NetBIOS/OS/Windows 8.1

- 101 NetBIOS/OS/Windows 10

- 102 NetBIOS/OS/Windows 10 Pro

- 103 NetBIOS/OS/Windows 10 Enterprise

- 104 NetBIOS/OS/Windows 10 Enterprise LTSC

- 105 NetBIOS/OS/Windows 10 Enterprise LTSC 2021

- 106 NetBIOS/OS/Windows 10 Enterprise LTSC 2022

- 107 NetBIOS/OS/Windows 10 Enterprise LTSC 2023

- 108 NetBIOS/OS/Windows 10 Enterprise LTSC 2024

- 109 NetBIOS/OS/Windows 10 Enterprise LTSC 2025

- 110 NetBIOS/OS/Windows 10 Enterprise LTSC 2026

- 111 NetBIOS/OS/Windows 10 Enterprise LTSC 2027

- 112 NetBIOS/OS/Windows 10 Enterprise LTSC 2028

- 113 NetBIOS/OS/Windows 10 Enterprise LTSC 2029

- 114 NetBIOS/OS/Windows 10 Enterprise LTSC 2030

- 115 NetBIOS/OS/Windows 10 Enterprise LTSC 2031

- 116 NetBIOS/OS/Windows 10 Enterprise LTSC 2032

- 117 NetBIOS/OS/Windows 10 Enterprise LTSC 2033

- 118 NetBIOS/OS/Windows 10 Enterprise LTSC 2034

- 119 NetBIOS/OS/Windows 10 Enterprise LTSC 2035

- 120 NetBIOS/OS/Windows 10 Enterprise LTSC 2036

- 121 NetBIOS/OS/Windows 10 Enterprise LTSC 2037

- 122 NetBIOS/OS/Windows 10 Enterprise LTSC 2038

- 123 NetBIOS/OS/Windows 10 Enterprise LTSC 2039

- 124 NetBIOS/OS/Windows 10 Enterprise LTSC 2040

- 125 NetBIOS/OS/Windows 10 Enterprise LTSC 2041

- 126 NetBIOS/OS/Windows 10 Enterprise LTSC 2042

- 127 NetBIOS/OS/Windows 10 Enterprise LTSC 2043

- 128 NetBIOS/OS/Windows 10 Enterprise LTSC 2044

- 129 NetBIOS/OS/Windows 10 Enterprise LTSC 2045

- 130 NetBIOS/OS/Windows 10 Enterprise LTSC 2046

- 131 NetBIOS/OS/Windows 10 Enterprise LTSC 2047

- 132 NetBIOS/OS/Windows 10 Enterprise LTSC 2048

- 133 NetBIOS/OS/Windows 10 Enterprise LTSC 2049

- 134 NetBIOS/OS/Windows 10 Enterprise LTSC 2050

- 135 NetBIOS/OS/Windows 10 Enterprise LTSC 2051

- 136 NetBIOS/OS/Windows 10 Enterprise LTSC 2052

- 137 NetBIOS/OS/Windows 10 Enterprise LTSC 2053

- 138 NetBIOS/OS/Windows 10 Enterprise LTSC 2054

- 139 NetBIOS/OS/Windows 10 Enterprise LTSC 2055

- 140 NetBIOS/OS/Windows 10 Enterprise LTSC 2056

- 141 NetBIOS/OS/Windows 10 Enterprise LTSC 2057

- 142 NetBIOS/OS/Windows 10 Enterprise LTSC 2058

- 143 NetBIOS/OS/Windows 10 Enterprise LTSC 2059

- 144 NetBIOS/OS/Windows 10 Enterprise LTSC 2060

- 145 NetBIOS/OS/Windows 10 Enterprise LTSC 2061

- 146 NetBIOS/OS/Windows 10 Enterprise LTSC 2062

- 147 NetBIOS/OS/Windows 10 Enterprise LTSC 2063

- 148 NetBIOS/OS/Windows 10 Enterprise LTSC 2064

- 149 NetBIOS/OS/Windows 10 Enterprise LTSC 2065

- 150 NetBIOS/OS/Windows 10 Enterprise LTSC 2066

- 151 NetBIOS/OS/Windows 10 Enterprise LTSC 2067

- 152 NetBIOS/OS/Windows 10 Enterprise LTSC 2068

- 153 NetBIOS/OS/Windows 10 Enterprise LTSC 2069

- 154 NetBIOS/OS/Windows 10 Enterprise LTSC 2070

- 155 NetBIOS/OS/Windows 10 Enterprise LTSC 2071

- 156 NetBIOS/OS/Windows 10 Enterprise LTSC 2072

- 157 NetBIOS/OS/Windows 10 Enterprise LTSC 2073

- 158 NetBIOS/OS/Windows 10 Enterprise LTSC 2074

- 159 NetBIOS/OS/Windows 10 Enterprise LTSC 2075

- 160 NetBIOS/OS/Windows 10 Enterprise LTSC 2076

- 161 NetBIOS/OS/Windows 10 Enterprise LTSC 2077

- 162 NetBIOS/OS/Windows 10 Enterprise LTSC 2078

- 163 NetBIOS/OS/Windows 10 Enterprise LTSC 2079

- 164 NetBIOS/OS/Windows 10 Enterprise LTSC 2080

- 165 NetBIOS/OS/Windows 10 Enterprise LTSC 2081

- 166 NetBIOS/OS/Windows 10 Enterprise LTSC 2082

- 167 NetBIOS/OS/Windows 10 Enterprise LTSC 2083

- 168 NetBIOS/OS/Windows 10 Enterprise LTSC 2084

- 169 NetBIOS/OS/Windows 10 Enterprise LTSC 2085

- 170 NetBIOS/OS/Windows 10 Enterprise LTSC 2086

- 171 NetBIOS/OS/Windows 10 Enterprise LTSC 2087

- 172 NetBIOS/OS/Windows 10 Enterprise LTSC 2088

- 173 NetBIOS/OS/Windows 10 Enterprise LTSC 2089

- 174 NetBIOS/OS/Windows 10 Enterprise LTSC 2090

- 175 NetBIOS/OS/Windows 10 Enterprise LTSC 2091

- 176 NetBIOS/OS/Windows 10 Enterprise LTSC 2092

- 177 NetBIOS/OS/Windows 10 Enterprise LTSC 2093

- 178 NetBIOS/OS/Windows 10 Enterprise LTSC 2094

- 179 NetBIOS/OS/Windows 10 Enterprise LTSC 2095

- 180 NetBIOS/OS/Windows 10 Enterprise LTSC 2096

- 181 NetBIOS/OS/Windows 10 Enterprise LTSC 2097

- 182 NetBIOS/OS/Windows 10 Enterprise LTSC 2098

- 183 NetBIOS/OS/Windows 10 Enterprise LTSC 2099

- 184 NetBIOS/OS/Windows 10 Enterprise LTSC 2100

- 185 NetBIOS/OS/Windows 10 Enterprise LTSC 2101

- 186 NetBIOS/OS/Windows 10 Enterprise LTSC 2102

- 187 NetBIOS/OS/Windows 10 Enterprise LTSC 2103

- 188 NetBIOS/OS/Windows 10 Enterprise LTSC 2104

- 189 NetBIOS/OS/Windows 10 Enterprise LTSC 2105

- 190 NetBIOS/OS/Windows 10 Enterprise LTSC 2106

- 191 NetBIOS/OS/Windows 10 Enterprise LTSC 2107

- 192 NetBIOS/OS/Windows 10 Enterprise LTSC 2108

- 193 NetBIOS/OS/Windows 10 Enterprise LTSC 2109

- 194 NetBIOS/OS/Windows 10 Enterprise LTSC 2110

- 195 NetBIOS/OS/Windows 10 Enterprise LTSC 2111

- 196 NetBIOS/OS/Windows 10 Enterprise LTSC 2112

- 197 NetBIOS/OS/Windows 10 Enterprise LTSC 2113

- 198 NetBIOS/OS/Windows 10 Enterprise LTSC 2114

- 199 NetBIOS/OS/Windows 10 Enterprise LTSC 2115

- 200 NetBIOS/OS/Windows 10 Enterprise LTSC 2116

- 201 NetBIOS/OS/Windows 10 Enterprise LTSC 2117

- 202 NetBIOS/OS/Windows 10 Enterprise LTSC 2118

- 203 NetBIOS/OS/Windows 10 Enterprise LTSC 2119

- 204 NetBIOS/OS/Windows 10 Enterprise LTSC 2120

- 205 NetBIOS/OS/Windows 10 Enterprise LTSC 2121

- 206 NetBIOS/OS/Windows 10 Enterprise LTSC 2122

- 207 NetBIOS/OS/Windows 10 Enterprise LTSC 2123

- 208 NetBIOS/OS/Windows 10 Enterprise LTSC 2124

- 209 NetBIOS/OS/Windows 10 Enterprise LTSC 2125

- 210 NetBIOS/OS/Windows 10 Enterprise LTSC 2126

- 211 NetBIOS/OS/Windows 10 Enterprise LTSC 2127

- 212 NetBIOS/OS/Windows 10 Enterprise LTSC 2128

- 213 NetBIOS/OS/Windows 10 Enterprise LTSC 2129

- 214 NetBIOS/OS/Windows 10 Enterprise LTSC 2130

- 215 NetBIOS/OS/Windows 10 Enterprise LTSC 2131

- 216 NetBIOS/OS/Windows 10 Enterprise LTSC 2132

- 217 NetBIOS/OS/Windows 10 Enterprise LTSC 2133

- 218 NetBIOS/OS/Windows 10 Enterprise LTSC 2134

- 219 NetBIOS/OS/Windows 10 Enterprise LTSC 2135

- 220 NetBIOS/OS/Windows 10 Enterprise LTSC 2136

- 221 NetBIOS/OS/Windows 10 Enterprise LTSC 2137

- 222 NetBIOS/OS/Windows 10 Enterprise LTSC 2138

- 223 NetBIOS/OS/Windows 10 Enterprise LTSC 2139

- 224 NetBIOS/OS/Windows 10 Enterprise LTSC 2140

- 225 NetBIOS/OS/Windows 10 Enterprise LTSC 2141

- 226 NetBIOS/OS/Windows 10 Enterprise LTSC 2142

- 227 NetBIOS/OS/Windows 10 Enterprise LTSC 2143

- 228 NetBIOS/OS/Windows 10 Enterprise LTSC 2144

- 229 NetBIOS/OS/Windows 10 Enterprise LTSC 2145

- 230 NetBIOS/OS/Windows 10 Enterprise LTSC 2146

- 231 NetBIOS/OS/Windows 10 Enterprise LTSC 2147

- 232 NetBIOS/OS/Windows 10 Enterprise LTSC 2148

- 233 NetBIOS/OS/Windows 10 Enterprise LTSC 2149

- 234 NetBIOS/OS/Windows 10 Enterprise LTSC 2150

- 235 NetBIOS/OS/Windows 10 Enterprise LTSC 2151

- 236 NetBIOS/OS/Windows 10 Enterprise LTSC 2152

- 237 NetBIOS/OS/Windows 10 Enterprise LTSC 2153

- 238 NetBIOS/OS/Windows 10 Enterprise LTSC 2154

- 239 NetBIOS/OS/Windows 10 Enterprise LTSC 2155

- 240 NetBIOS/OS/Windows 10 Enterprise LTSC 2156

- 241 NetBIOS/OS/Windows 10 Enterprise LTSC 2157

- 242 NetBIOS/OS/Windows 10 Enterprise LTSC 2158

- 243 NetBIOS/OS/Windows 10 Enterprise LTSC 2159

- 244 NetBIOS/OS/Windows 10 Enterprise LTSC 2160

- 245 NetBIOS/OS/Windows 10 Enterprise LTSC 2161

- 246 NetBIOS/OS/Windows 10 Enterprise LTSC 2162

- 247 NetBIOS/OS/Windows 10 Enterprise LTSC 2163

- 248 NetBIOS/OS/Windows 10 Enterprise LTSC 2164

- 249 NetBIOS/OS/Windows 10 Enterprise LTSC 2165

- 250 NetBIOS/OS/Windows 10 Enterprise LTSC 2166

- 251 NetBIOS/OS/Windows 10 Enterprise LTSC 2167

- 252 NetBIOS/OS/Windows 10 Enterprise LTSC 2168

- 253 NetBIOS/OS/Windows 10 Enterprise LTSC 2169

- 254 NetBIOS/OS/Windows 10 Enterprise LTSC 2170

- 255 NetBIOS/OS/Windows 10 Enterprise LTSC 2171

- 256 NetBIOS/OS/Windows 10 Enterprise LTSC 2172

- 257 NetBIOS/OS/Windows 10 Enterprise LTSC 2173

- 258 NetBIOS/OS/Windows 10 Enterprise LTSC 2174

- 259 NetBIOS/OS/Windows 10 Enterprise LTSC 2175

- 260 NetBIOS/OS/Windows 10 Enterprise LTSC 2176

- 261 NetBIOS/OS/Windows 10 Enterprise LTSC 2177

- 262 NetBIOS/OS/Windows 10 Enterprise LTSC 2178

- 263 NetBIOS/OS/Windows 10 Enterprise LTSC 2179

- 264 NetBIOS/OS/Windows 10 Enterprise LTSC 2180

- 265 NetBIOS/OS/Windows 10 Enterprise LTSC 2181

- 266 NetBIOS/OS/Windows 10 Enterprise LTSC 2182

- 267 NetBIOS/OS/Windows 10 Enterprise LTSC 2183

- 268 NetBIOS/OS/Windows 10 Enterprise LTSC 2184

- 269 NetBIOS/OS/Windows 10 Enterprise LTSC 2185

- 270 NetBIOS/OS/Windows 10 Enterprise LTSC 2186

- 271 NetBIOS/OS/Windows 10 Enterprise LTSC 2187

- 272 NetBIOS/OS/Windows 10 Enterprise LTSC 2188



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144





GE Rental/Lease

You'll find our rental computers everywhere.

It's a downright liberating idea. Because, quite simply, GE Rental/Lease can help deliver you from the high cost of buying and maintaining all your PCs and workstations. That means you can use your capital to build bigger profits, and GE's capital to build bigger systems. What's more, you can try today's brave, new technologies without being locked into any of

them. And since GE offers a world-class rental inventory of new computer equipment, you'll have the freedom to choose whatever you need from the biggest names in the industry—backed by skillful technical specialists and GE's ISO 9002-registered quality program. You'll also know that we can get all your equipment where it has to go, when it has to get

there. So when you're ready to rent computers, call the one number that works everywhere:



1-800-GE-RENTS

© 1994 GE Capital. All rights reserved. ISO 9002 Registered.

GLOBAL BUSINESSES RELY ON OUR

OPEN GLOBAL NETWORKS DESIGNED, INSTALLED, AND SERVICED BY UB NETWORKS.

Over the last 15 years we've become the network provider of choice for many of the world's most successful companies. Our customers have installed tens of thousands of network nodes to create the infrastructure to expand their operations. So if you're looking for a strategic partner to help you build advanced open global enterprise networks, you'd be wise to talk to us.

You need an open enterprise network capable of providing instant access to information. Anytime, anywhere. But the more capable the network, the more complex it is to design, install, and manage. Quite a challenge if your staff and budgets are increasingly limited.

A NEW NETWORK SOLUTIONS COMPANY. 15 YEARS IN THE MAKING.

UB Networks™ is the answer for network managers whose in-house resources have been stretched to the limit.

We offer a wide range of connectivity, from Access/One™ intelligent switching hubs for enterprise solutions to the Access/Workgroups™ stackables—low-cost, high-performance networking for workgroups and remote offices supported by a range of network management options. And our unique distributed ATM/Anywhere™ solutions offer the most cost-effective ATM connectivity available.

Fold A to B to discover what is behind the speed of multinational corporations.

A



OPEN NETWORKS BUILT FOR BUSINESS.

INVESTMENT PROTECTION.

All our products are built to protect your investment, so you can evolve into new technologies on a pay-as-you-grow basis. Strategic alliances ensure that our product offerings are complemented by strong third-party partnerships. And our solutions are backed by an experienced, global service and support infrastructure designed to provide open information solutions that deliver the competitive advantage you're seeking at a reasonable cost, anywhere in the world.

Call your UB Networks sales office or reseller for our free guide, "How To Solve Network Complexity." We'll help your enterprise become a world power.

ACCESS/ANYWHERE™ from UB Networks

Access/Workgroups*

Stackable hubs and management tools for Ethernet and Token Ring workgroups with Access/Stax™ and Access/Trix™.

Access/One™

Full-feature manageable connectivity options for the entire enterprise using Token Ring, FDDI, ATM and Ethernet with VNA™ supporting virtual networks.

Access/Management™

The NetAssistant™ for Windows, NetDirector™ for UNIBUS and OS/2® products offer the network management features you need, priced for networks of any size.

Access/ATM™

GridSwitch 155™ and the other Access/ATM products distribute high-bandwidth capabilities throughout your network when and where you need them—ATM/Anywhere™ for high-performance workgroup connections or LAN-to-WAN connectivity at the right price.

Access/Service™

Expert service, integration, consulting, and training, available worldwide. And we can support your network wherever and whenever you need us.

For information and a free "Network Complexity" poster, call

1-800-777-4LAN,

(408) 496-0111 or fax (408) 970-7337.



UB Networks

Fomerly Legg Mason Inc.

Our Experience Makes It Simple.

World Headquarters: 100 Networks, Inc., 100 Franklin, Suite 200, Santa Clara, CA 95054
Legg Mason Inc. and its affiliates are registered trademarks and 100 Networks, Inc. is a registered trademark.
Legg Mason, Access/Service, Access/Stax, Access/Trix, VNA, Access/ATM,
and GridSwitch 155 are trademarks of Legg Mason Inc. Networks, Inc. All other products and services mentioned are the
property of their respective holders. ©1994 Legg Mason Inc. Networks, Inc. All rights reserved.

Big Brotherhood

A lot of elements make up the truly unique culture of the U.S., but the key ingredient is a zealous regard for individual rights such as privacy.

Now, as we stand on the threshold of the next great frontier known as cyberspace, we face a collision between the desire to push the limit of that frontier and the spirit of laws laid down more than 200 years ago. In other words, the minutemen are standing steadfast on ramps leading to the information superhighway.

Some recent news stories highlight this issue. Last week we wrote about the efforts of civil rights activist Barbara Jordan to establish a national identification system to keep employers from illegal alien from bona fide employees. Sound enough in these days of rampant illegal border crossings.

Yet privacy advocates are slamming the proposal, for the same reasons so many people lined up in diametric opposition to the government's proposed Clipper chip: preservation of individual rights and distrust of government.

Let me be clear: cases such as those are growing suspicions that information technology might become the ultimate agent of doom for individual rights — that George Orwell's *1984* will happen, only perhaps 20 years late. And it isn't just a suspicion that is fueling this concern. *

For example, think for a moment about the wide-spread ethical abuses — if not outright illegal uses — of database technology that have already occurred. A couple of years ago, fund-raisers for a prominent and respected evangelist compiled lists of people who were up to their eyeballs in debt, then sent them letters soliciting \$100 gifts in exchange for prayers to be said on behalf of their plight.

Of course, it can be argued that for every great advance in society there have been individuals eager to exploit that advance. But seldom if ever has there been a force like information technology that will be so utterly pervasive in the lives of everyone.

That notion should be cause for those whose professional lives revolve around information technology to reflect on the role they can play in ensuring that a conscienceless technology doesn't somehow grow an aura of diabolical intent or purpose. You know, kind of like HAL in *2001: A Space Odyssey*.

This technology-gone-haywire scenario may seem far-fetched until you listen to some of the arguments put forth to prevent what, by most reasonable inspection, seem like potentially beneficial deployments of computer technology. The Clipper controversy is a good case in point, the illegal alien ID system another. The privacy czars aren't really crazy at all, and they see their mission as a noble one. But they have some peculiar ideas about information technology.

Unfortunately, suspicion of governmental institutions and some private ones runs deep in this society. We are seeing more these days the reflection of that suspicion in ways that may slow and even prevent the use of technology toward the greater good.

Bill Laberis

Bill Laberis, Editor-in-Chief
Internet: blaberis@cw.com



Rich Tennant is on sabbatical. This is one of his classic cartoons from 1989.

Plenty of steam

We find it astonishing that you would publish a front-page article speculating on the future of a strategic product such as Pathworks' "Pathworks loses steam." [CW, July 25] based on a thin market analysis of just seven users. Pathworks has an installed base of well over 2 million users and, as you point out, is Digital's No. 1 selling layered software product. Surely it deserves more careful and thorough reporting.

As we told your reporter, Digital will continue to provide significant enhancements to Pathworks servers based on Microsoft's networking technology. We will also add value to other network operating systems environments, including Microsoft's LAN Manager 3.0 in Windows for Workgroups and NT Server, IBM's LAN server, Novell's NetWare and Apple's AppleShare.

According to a Gartner Group report, "The strength of Pathworks has always been as an integration supervisor of network operating system functionality where multiple clients, networks and file-sharing protocols are required."

Microsoft has stopped developing its OS/2 server product, but IBM is continuing enhancements to OS/2 and LAN Server. Pathworks for OS/2 can choose either LAN Manager or LAN Server while enjoying full interoperability with the rest of the Pathworks, Microsoft and NetWare environments.

Digital is committed to bringing the most current networking technologies available on each platform to each customer and to providing a smooth path for its

installed base to move up to these technologies.

Mark O'Connell
Director
Software Product Marketing
Digital Equipment Corp.
Maynard, Mass.

Unix misses

"IBM and CA enhance database features" [CW, July 16] gives an impression that the Unix success was due to the strength of the databases. In the initial stages, most Unix databases were never subjected to high-volume processing. Even today, no Unix product is anywhere near the CICS volume of a mainframe database.

Gopi Nathan
Nordic Support Center,
DB/DC Products
Computer Associates Norway
Oslo

There are 15 sponsors of the Open Software Foundation, not just three. Schulte shows naivete in deciding that complex, multi-party development projects have no need for vendor-neutral project management in this very competitive world. The OSF's mission is to work with the industry to build the open systems infrastructure the marketplace demands.

Schulte also dismisses the engineering role the OSF played in producing the technology with which we are associated. I find it difficult to believe that he fails to recognize the extraordinary engineering achievement of the OSF in providing OSF/Motif, Distributed Computing Environment, Distributed Management Environment, OSF/1, ANDF and microkernel.

I suppose I must eventually learn to live with Schulte's pontifications about matters he appears to know little about, but shame on Computerworld for associating itself with it.

David Tory
Chairman
Open Software Foundation
Cambridge, Mass.

Keep an Open mind

I was shocked to read "OSF irons down, mulls its future" [CW, June 27] and the extraordinarily negative quotes from Roy Schulte of Gartner Group. Schulte states that IBM, Hewlett-Packard and Digital "don't need a third project to manage any process" but need only a "central broker to push paper around."

Why would IBM, HP and Digital want anyone merely to push paper around while they executed a joint project? More to the point, why would they invest a large sum of money to have someone do that?



Computerworld welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor in Chief, Computerworld, P.O. Box 9175, 375 Constitution Road, Framingham, Mass. 01701. Fax number: (508) 875-8933; Internet: letters@cw.com. Please include a phone number for verification.

Dispensing the measurement myths

Howard Rubin

Editor in Chief
John K. Vassilas
Letter
Patricia L. Dugan
News & Editor
Mark A. Leonetti
Section Editor
John C. Scott
Antitrust News Editor
Kerry Keeler
Antitrust Columnist
John W. Thompson
Technical Editor
Charles H. Green
Senior Editors
Eugene G. Karp
Networking
Craig Stodden
Software
Ed Sorenson, PC Software
Michael Hiltzik
Networks
Ricardo Valdez
Systems
William Brantley, PC Software
Steve Morris, Networking
Hardware
Mike Hiltzik, PC Hardware
John R. Johnson
Staff Writers
Stephen P. Rosenfeld, Local Government
Newswriter
Pat Gable
Management
Suzanne M. Lacy
Human Resources
Joseph Maguire, Corporate Strategies
Larry J. Fink, Inc. Design
John C. Scott
Alfred A. Mann
Michael A. Hiltzik
Associates Editors
Barbara A. Berman, David B. Sacks, Michael C. Johnson
Senior Reporters
Karen Berliner, Long Island/Southern
New England
Lisa Lehrman, Resource Center
Photographer
John G. Mabanglo
Copy Editor
Anne M. Tice
Associate Copy Editor
Caroline Agius-Maguire
Senior Copy Editors
Katherine L. Johnson, Diane E. Koenig
Editorial Assistant
Michelle L. Myers, Jim J. Blasz
Kathy Schubert, Michael Colburn
Design Director
Steve Kornblith
Senior Graphic Designer
Tina M. Cole
Design Assistant
Gloria P. Clegg
Graphic Designers
Stephanie L. Fischer, Mary Beth Marquardt
Image Producer
Peter J. Russell
Cartoonist
John C. Scott
Office Manager
Diane Garguilo
Administrative Assistant
Lorraine Natale, Linda Brown
Alison S. Seiden
Editorial Production
Sharon Brand
Electronic Marketplace Listener
Tom Dehaven
Competitor News
Competitor News Journal
Alan M. Kroll
Managing Editor of Special Projects
Charles McMurtry
Editorial Intern
Thomas M. Hickey
Thomas M. Hickey Senior Correspondent
Information Systems Editor
John C. Scott
Washington, D.C.
Health Services Group, San Anselmo
Gary L. Amstutz, President
Preston L. Smith, Vice President
Jeffrey L. Hart, Vice President
West Coast
John C. Scott
Mark Hulbert, Karen K. Hall
Senior Correspondents
Samuel M. Hiltzik, Michael S. Hiltzik
Chris Ferguson, Dennis Avner
Books
Lisa Lehrman, Book Review Editor
ISBN/R# 4411
Productivity
Lisa Lehrman, Productivity Correspondent
ISBN/R# 4412
Marketing
Lisa Lehrman, Marketing Correspondent
ISBN/R# 4413
Business
Lisa Lehrman, Business Correspondent
ISBN/R# 4414

Function points can solve all of information technology's problems, right? Won't they take care of everything from measuring information technology's value to providing a sound basis for estimating the next object-oriented-GUI-client/server/virtual reality/workflow management-agent-based-RAD-developed system? Won't it suffice to just banner the halls of systems development with charts to claim that the demons of process improvement and Total Quality Management have been satisfied? In two words, no way!

There is a real change coming in software measurement, but as the saying goes, the more things change, the more they stay the same. It's about time the basic myths of measurement are blown away. In fact, senior information technology management will welcome this new coming of measurement. First for some sobering news — since 1980 more than 500 information technology organizations have tried to put measurement in place, but fewer than 80 have been successful.

Myth 1 is that measurement is overhead. Measurement gurus typically quote the cost of measurement to be at least 5% to 8% of a budget. This implies that measurement is an explicit function and is overhead added to the cost of the real work that has to be done. Rather than being overhead, measurement is a value-added, real-time part of information tech-

nology practice and process.

Myth 2 says there is a "best" metric and selecting it will solve all measurement problems. There is no single cure-all metric, no silver bullet that can assess all aspects of an information technology organization.

Myth 3 is that the most critical success factor for a measurement program is choosing the right metric. Wrong! The critical success factors for measurement program implementation are the fit of the metrics with business goals, their fit as part of the natural workflow process, their intrinsic quality and the organization's readiness to actively use measures. You can lead an information technology organization to the best metric, but it won't make them measure.

Myth 4 says that metrics are forever. Most measurement programs are built as if they are immutable. Rarely does one see triggers in measurement programs, indicating the measurement themselves must be reconsidered. If you want your measurement program to fail, define it so it can't be enhanced with new metrics for new needs.

Myth 5 says leave the business of business measurement to the business and let information technology focus on its internal (in peace). This clearly flies in the face of what CIOs consider to be important and is contrary to the basic business philosophies of participation, empowerment and cross-functional development. If you don't view and measure, information technology as part of a business — you'll soon be out of the business.

Anyone getting started in measurement today should skip the myths, ignore the conventional wisdom and determine why they are measuring and then what they need to measure. Information technology and business executives now know that measurement is a competitive advantage. How do you measure measurement success? The irony is that those who can answer that really don't need it.

Rubin is a professor in the Department of Computer Science at Hunter College of the City University of New York and a faculty affiliate at Gemini Consulting and Cap Gemini America, Inc.

In the long run, software is free. If you look carefully, you can see signs of it all around you. Although in the old days a software product could provide an anomaly, nowadays software companies make most of their profits in the first few years of shipping a product. Microsoft's profits on DOS, for example, aren't going to shareholders' dividends but to investment in future products.

To understand, you have to ask, "How much does software cost?" That doesn't mean how much is it worth, but how much does it cost above the cost of designing it, distributing it, and marketing it? An economist would observe, correctly, that competition will ultimately reduce the price of software down to that level. In the longer term, there's no part of the price attributable to "intellectual property" because there's no way you can charge for it in a world where most software can be copied. In literary works, you pay for the uniqueness (protected by copyright, for now); in software, you pay for (but not a lot) for the standards. For

certain inventions, you pay for novel ways of doing things (patents), but in most application software, you're really paying for embodiments of generally known ideas and business processes.

Consider this scenario. Suppose Microsoft were to decide to put Windows in the public domain. Anybody could use it, anybody could copy it and resell it (for whatever they could get, which couldn't be much). What would happen? Not much in the longrun (although Novell would surely denounce this as another violation of predatory practices). First of course, everyone would get Windows free. The biggest harm would be to disk duplicators, and plastic makers, shrink-wrap factories and the like. In Part 2 of the story, people would need help installing Windows to get it to work with other applications.

But Microsoft would not bother to return user or phone calls because it would not be getting paid for this product. Users would turn to dealers, resellers and other sources of aid, who would say, "We'll give you Windows for free, but

you have to pay for support and installation assistance."

So, it turns out, that's what the money is for. It's not for the product but for the infrastructure around it. Vendors put a price tag on a product so resellers can collect money from end users, but that money goes more to the support community, not the developer's creation, once the costs of producing the product (design, bug fixes, etc.) have been recovered. After the first year or so, the vendor begins to get a return on its investment in the market infrastructure, the creation of the software is just a part of that. The "market infrastructure," incidentally, includes not just the developer, but the user base. Indirectly the vendor impacts in their education, their brand preference (through advertising) and their applications, modules and other data that use the software.

The "price" of the product is merely a means of recovering that investment, but the investment was not only in the product itself. Instead, the best way for a vendor to recover the investment is to come out with a new product that can recover the investment while the price of the old product drops to meet competition.

Dyson is president of EDventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached on the Internet at eddy@edv.org.

The cost of software isn't for the product but the infrastructure.



Ester Dyson is president of EDventure Holdings, Inc. in New York. She welcomes readers' thoughts and can be reached on the Internet at eddy@edv.org.

TANDEM MEANS

■ Tandem? Open? Yes, indeed. Whatever the implementation you need—POSIX, DCE,

TUXEDO, even CICS—

Tandem's Himalaya

Range delivers a transparent open-systems

interface. And it will

support the information

framework or application that you choose.

We repeat: *you choose*. We've designed our open Himalaya Range servers to deliver the flexibility and choice you require. Because truly open systems are something that users like you

define, not some one-size-fits-all solution that never quite fits your needs.

And what's more,

Tandem's Himalaya

Range combines this seamless UNIX per-

sonality with contin-

uous availability and

commercially proven parallel processing.

Thus you can expect—and get—broad access to information; improved productivity; shorter development times; a larger applications pool; and the ability to better manage,

port and interoperate with legacy systems. So your investment in hardware, software and training will be safe.

Speaking of safety, a word of caution. Open systems fashioned from multiple vendors do give you choices, but they can also harbor system and network failures, and data corruption. Unless you're using a Tandem server.



Our parallel processing architecture insures that Tandem systems will operate continuously through hardware, software and network failures. The 20 years we've invested in application availability and parallel processing brings you the most reliable and powerful servers in the world.

And now, with Himalaya models starting at \$25,000, we're also making some of the most affordable servers in the world. To learn more about Tandem's UNIX personality and world-leading availability, call 1-800-959-2492 ext. 715 today for your free and informative copy of "Open Computing for Business."

COMBINE A UNIX PERSONALITY WITH
PARALLEL PROCESSING AND CONTINUOUS
AVAILABILITY, AND YOU'VE GOT AN OPEN
SERVER THAT'S RIGHT FOR ANY
SOLUTION ENVIRONMENT.

 **TANDEM**

TANDEM MEANS BUSINESS

Desktop Computing

MICROSOFT DEBUTS...
CHICAGO TOOLS, 42
NEW PRODUCTS, 46

Software distribution

Try-before-you-buy largely untried

By Bill Scannell

While the try-before-you-buy method of software distribution has won over some corporate fans, the medium is still fighting for broader market acceptance.

A little more than a year ago, IBM's Software Manufacturing Co., along with distributors Merial, Inc. and Ingram Micro, Inc., launched programs that allow users to browse through a wide variety of recently released applica-

tions get pre-releases of software long before it ends up on a CD. That's where we make a purchasing decision. You don't see a lot of pre-releases of code on CDs," said Brian Moura, assistant city manager for the city of San Carlos, Calif.

CD-based distribution programs have also faced competition from bulletin boards during the past year. Many corporate users are downloading beta versions of programs from software bulletin boards rather than waiting for finished products on CD-ROM.

"We actually downloaded the latest build of Chicago over the Internet weeks before Microsoft could get us a copy of it on CD," said one Chicago beta tester who requested anonymity because of his nondisclosure agreement with Microsoft Corp.

Still, the idea of purchasing a CD-ROM with a variety of software titles that users can specifically request from a vendor or reseller has its purpose and appeal.

Greatest hits

For instance, the idea behind IBM's CD Showcases was to let users mix and match different software titles to solve a specific problem much as music buyers might put together a compilation of their favorite songs at Tower Records.

"This business is all touch and feel. You need to play around with something before you know what you want it," said Pete Bavaro, an information systems manager at The Dill Group in Westbury, N.Y., one of the nation's largest suppliers of medical products.

While IBM officials said they are pleased with the acceptance of CD Showcases in its first year, one exec holding the program back is the slower-than-expected sales of CD-ROM drives. But they believe that impediment should be less of a factor by next year.

"It's about a little slower than expected. We expect to see a down-

try-before-you-buy, page 42

Under lock and key

A CD-ROM unlocking scheme may include the following steps for buying software:

- 1 Users receive a CD-ROM containing a variety of software applications, utilities or games from a local reseller or vendor.
- 2 Users view full demonstration of programs on the CD-ROM.
- 3 Users call the vendor to request a code that unlocks the chosen program to the user's hard drive.
- 4 Users pay over the phone via credit card.

tions and operating systems on CD-ROM from their offices.

If users want to make a purchase, they simply call a toll-free phone number to receive a code that "unlocks" the program and allows them to copy it to their hard drives. Users can pay for the program during the same phone call using a credit card.

The distribution programs were intended to save users time spent driving to local retailers to check out the latest titles, give them more time to get a feel for new software and save them money, compared with software sold through resellers.

Some prefer face to face

Some corporate users said they find these programs useful for making buying decisions on hundreds of lesser-known applications from smaller vendors, but many still prefer dealing directly with vendors when buying best-selling titles or hundreds of copies of a program.

"One problem with all these programs is that most corporate ac-

Short supplies madden high-end notebook users

By Michael Fitzgerald

A horse of a different color is no good to users if they cannot corral it, and new high-end notebooks are tough to lasso, users said. A shortage of such notebooks has slowed project deployment and created headaches for information systems managers.

For instance, IBM's attempt to shift users away from its backlogged high-end ThinkPad notebooks with active-matrix color screens to the passive-matrix color or versions seems to have backfired, in part because the company improperly forecast demand for models with 340MHz and 510MHz hard drives.

As a result, the 750Cs, IBM's high-end passive-matrix color notebook, is also in short supply.

Backup plan

"IBM has forced us to [a second source]" for notebooks, said an IS manager at a Fortune 500 company in the Northeast, who asked not to be identified. The manager said IBM had promised several hundred units of the 750Cs by the end of the second quarter but delivered only a few. He said he had no choice but to turn to another vendor to meet his project needs.

The manager said the supply issues mean that "you don't do" project rollouts.

"We keep apologizing for implied commitments [that we don't meet]," he added. "We go and say we're aiming for whatever large date, and it doesn't happen, and it's just a mess."

His second choice for a notebook, Compaq Computer Corp.'s LTE Elite, may not bring improvement. Other users have commented on the limited availability of these products.

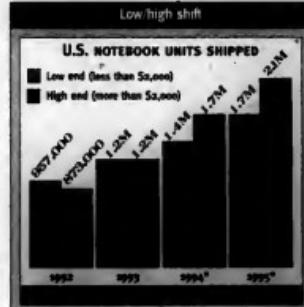
"We can get small quantities [of Elites] but not enough to roll out to a department," said Glenn Jarmura, often technology manager at Baxter Healthcare Corp. in Deerfield, Ill.

Compaq announced the Elite in March, with a second-quarter delivery target. The product has slowly trickled into the market, though, and one IS manager at a major food company said the delay has led his company to dump Compaq in favor of notebooks made by Toshiba America Information Systems, Inc.

"Remarkably enough, we told Compaq they were out [of the account] and magically 50 Elites appeared," said the food company manager, who asked not to be named.

No small matter

The manager said projects were never killed because of product delays, but they could ship, or another vendor's machines would be substituted. Substituting machines, though, presents a problem in that "supporting two platforms is



Source: BIS Strategic Decisions, Norwell, Mass.

not trivial, even with Plug and Play," the manager said.

While Compaq's and IBM's sheer size have made their delivery woes an issue for users, other vendors, too, are suffering from shortages on the high end of the notebook market. AST Research, Inc., for instance, has a four-week delay on its new Ascentia 900N. Toshiba also has delays on its high-end corporate notebooks.

"Depending on the vendor, these supply problems have been going on for more than a year now; it's ridiculous," said Jeffrey Hennig, an analyst at BIS Strategic Decisions in Norwell, Mass. "It's definitely already hurt IBM, I don't think Compaq has felt it yet, but they're not immune. Nobody's brand name is worth so much that failing to deliver product is going to keep people loyal to them for very long."

Room for the little guys

Supply problems for the Big 4 in notebook computing have slowed market consolidation, analysts said. IBM, Compaq, Toshiba and Apple Computer, Inc. have approximately 50% of the notebook market, according to Dataquest, and the delay has led its market to dump Compaq in favor of notebooks made by Toshiba America Information Systems, Inc.

"Remarkably enough, we told Compaq they were out [of the account] and magically 50 Elites appeared," said the food company manager, who asked not to be named.

"If [Dell] maintains their traditionally high level of support, then why wouldn't you give them a try, especially if you deal with Dell on the desktop?" asked Leonard Steinbach, vice president of information technology at the National League for Nursing, Inc. in New York, which uses Dell desktops.



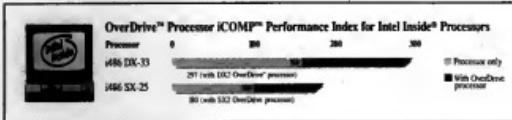
CPU upgrade.

OverDrive™ processor, a family of single-chip upgrades that significantly boosts the overall performance of your Intel®486™ SX and DX processor-based PCs.

Slow performance.

Your software is bogged down, but you can't buy a new PC right now.

To speed up your 486,



Free OverDrive® processor demo disk.

To see how much faster your software runs with an OverDrive™ processor, call 1-800-538-3373, Ext. 178 for your free demo diskette. Or simply complete this card and drop it in the mail. Either way, it's the right path to take.

Please answer the following questions to help us better serve you. Thank you.

1. What Intel processor-based system(s) are you currently using?

80386™ 80486™ Intel® 387™ Intel® 486™
Intel® MMX™ Processor

2. How many OverDrive processors are you or your company interested in purchasing?

0 _____ 1-4 _____ 10-49 _____ 50+ _____

3. When are you interested in purchasing an OverDrive processor?

0-60 days _____ 61-120 days _____ 120+ days _____

Name _____

Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Daytime Telephone # _____

For inquiries outside the U.S., after proper postage. European residents may also call +44 (0) 783 431133, and ask for info pack 10013.

OVERDRIVE ©1994 Intel Corporation.





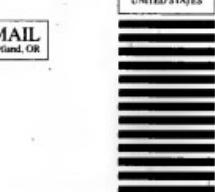
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
First Class Mail Permit No. 79 Portland, OR

Postage will be paid by addressee

intel.

PO Box 10266
Portland OR 97210-9879





Call 1-800-538-3373, ext. 178.¹
To find out more about the IntelSX2[™]
and IntelDX2 OverDrive processors
and to receive a free demo disk.

Speeds up software.

Microsoft Excel[®] 4.0 runs 83% faster and
Microsoft Word[®] 2.0 65% faster when you
upgrade a i486[®] SX-33 processor with an
IntelDX2[™] 66 MHz OverDrive processor.

¹For European residents, call +44 (0) 793 431155, and ask for product AX112.
© 1994 Intel Corporation. *Other brands and names are the property of their
respective owners.

follow the upgrade path.



OverDrive[™] processor family of products

intel[®]

Microsoft debuts Chicago tools

By Stuart J. Johnston
CHICAGO

Microsoft Corp. demonstrated at Windows World here recently a set of systems management tools and other features in the Chicago operating system aimed at simplifying the task of administering the new system.

Chicago, the next major version of Windows, will come with utilities that include a System Policy Editor tool to impose specific system policies outlining what users can and cannot do.

Chicago is also expected to include such tools as a graphical system monitor, which will let users or help desk technicians monitor the performance of items on users' PCs in real time. These items include processor usage, the number of reads per second being performed on the hard drive and the number of users accessing files on that drive at a given moment.

"The monitor is definitely very cool," said Eric Moran, president of Graphical Bytes, Inc., a software consultancy and commercial developer in South Hampton, N.Y. "It lets you determine graphically what's happening in the system on any number of items individually."

Remote Rx

In the demonstration scenario presented at the conference, a user called the help desk to ask why his system was running so slowly. By using the system monitor to remotely monitor the caller's PC, the help desk technician discovered that another user was severely reading a large file off the caller's machine in the background.

By using the Systems Policy Editor, the help desk technician stopped the intruder and adjusted the caller's PC to prohibit access to such files in the future.

The System Policy Editor also lets administrators hide some system features from indi-

vidual users, such as the icons for the Windows Control Panel, or establish security settings.

Another feature built into Chicago to aid its integration into information systems managers' systems plans is a central security "pass-through" function that works with both Novell, Inc.'s NetWare and Microsoft's Windows NT Server security system, said Brad Chase, general manager of Microsoft's personal operating systems group.

The pass-through feature enables systems managers to maintain one set of passwords on the server and eliminates the need to keep a copy of users' passwords on individual machines, as is the case with Personal NetWare, Chase said.



Personalized PC

Chicago, or Windows 4.0, can be customized to run with separate configurations for several individuals by using user profiles. These profiles can be used to define facilities ranging from how the graphical user interface looks to each user to what network drives and files are visible.

Alternatively, Chicago will still support so-called INI (for "initialization") files and AUTOEXEC.BAT and CONFIG.SYS files, Chase said. Corporate users expressed concerns last December that Chicago might not let them support multiple nacres on a single PC [CW, Dec. 20, 1993].

Microsoft also demonstrated a "hands-free" installation of Chicago on a desktop PC from a NetWare server.

In other developments at the show, Hewlett-Packard Co. announced it will ship a version of its OpenView network management product that works with Chicago in the first half of next year.

Chase also said Microsoft will charge a "small fee for cost of goods" when it begins broad testing of Chicago by hundreds of thousands of users this fall. Although the fee has not been determined, it may run as high as \$30.

Try-before-buy

CONTINUED FROM PAGE 29

pling of [CD-ROM] drives in 1994, but we did not. We expect the Christmas selling season to be phenomenal for CD-ROM drives," said Ian Bonnett, IBM's director of independent channel marketing.

On the bandwagon

This past February, IBM's CD Showcase received a boost when 15 software developers, including archrival Microsoft, decided to make their best-selling applications available through the program. Other vendors joining the program included Lotus Development Corp., WordPerfect Corp. and Borland International, Inc. IBM officials said there are more than 300 products available through the program.

Providers of try-before-you-buy programs say developers have as much to gain as users in that they become better educated about the dynamics of various target markets and get clearer profiles of their users.

"Registration rates really can increase with

a program like CD Showcase. We can now electronically capture registration data the moment a user clicks a title," said Guy Prilby, a senior account manager of OEM relations at Microsoft.

IBM and Morrisel officials believe their programs also will benefit resellers in that resellers can mix and match a variety of software titles to better meet the needs of vertical markets such as accounting or medicine. And like software suppliers, they gain more specific information about their customers.

"I think it is a good alternative means of distribution, and in most cases, it should work in some pockets [of corporations]," said Bryan Orbach, president of Orbach, Inc., a New York-based consultant on distribution issues.

The demise of the impulse buy
Some resellers, however, believe that such programs are causing some channel conflicts and eroding sales among walk-in customers.

"I do a lot of business from people who just walk in to buy just one package and end up buying two or three impulse buys after walking around. Programs like these could take away from a lot of that," said one Computerland Corp. dealer of New York.

Platforms

Upgrade options open cost-saving possibilities

By Mark Halper

OREGON CITY, ORE.

Don't tell PED Manufacturing Ltd.'s Dave Howell "if it ain't broke, don't fix it."

The MIS director at the Oregon City manufacturing company was asked about the performance of his Sequant Computer Systems, Inc.'s Windows NT box, but he is nonetheless considering changing platforms as he beefs up processing power. His reason is a good old-fashioned one.

"They have to be a little more realistic on pricing," Howell said. It will cost him about \$60,000 to upgrade to a dual Pentium-based Sequant system, compared with about \$40,000 for a comparable model from a traditional PC vendor, Howell said.



PED Manufacturing's
Dave Howell: Cost is
the key motivator

margins. If the customer finds that price is the determining criteria, the PC vendors will win."

Howell was one of the early and few adopters of the Winserver line of NT boxes unveiled by Sequant early last year. PED has since slowly migrated from a 7-year-old proprietary system from now-defunct Point Four since July 1993.

At the time, NT hardware vendors were few and far between, as Howell noted. Sequant "has a lot of competition out there now."

One option Howell is exploring is a chip upgrade for his current box. But, he said, Sequant told him it is not sure it can simply swap processors, and he is waiting for a final answer from the firm.

Pricing aside, Howell said he is satisfied with Sequant's performance. Furthermore, Sequant has been there whenever PED required vendor assistance: "Their technical support has been some of the best we've dealt with," he said.

Briefs

NEC, SunDisk team up

NEC Corp. and SunDisk Corp. recently announced they are collaborating on the development of multi-bit flash memory technology. The two companies expect the collaboration to produce 5000-byte flash cards vs. the 400-byte maximum that ex-

ists today. They hope to lower flash memory prices overall in the second half of the decade.

AT&T helps out GTE

GTE Telephone Operations in Dayton, Ohio, recently reached out to AT&T Global Information Resources. The AT&T division will implement a data management strategy for GTE's customer service operations for an undisclosed sum.

7 ports on our Latitude™ XP Advanced Port Replicator, including Ethernet 40Base-T and SCSI-2 for only \$199.

524MBs of hard drive space is available. That's probably bigger than your desktop hard drive.

A 3.3 volt processor consumes fewer watts and pumps out hours of power so you can cruise.

8 hours of battery life. Yes, you read it right: 8 hours.

6 lbs. of Latitude® or 5.9 lbs. of Latitude XP and you get 32-bit local bus video on the road.

4 processor options on the Latitude XP, including the DX4 100MHz processor – the fastest clock speed you can buy in a notebook.

2 ways to get 8 hours out of your Dell notebook: The 8 hour Smart Lithium Ion battery on the Latitude XP. Or two 4-hour NiMH batteries on the Latitude.



#1 in the independent VeriTest Steeplechase Battery test! In fact, the Dell® Latitude™ XP DX2/50 destroyed the previous 486 battery life record by almost 5 hours.

New record

Dell Latitude XP 50MHz STN
Sleepbase: 17 hours 5 minutes

Typical VeriTTest Steeplechase Results:¹
[Testing with power management. Actual battery life will vary with configuration and usage.]

NEW RECORDS:	hrs:min
Dell Latitude XP DX2/50 STN	17:05
Dell Latitude XP DX4/100 TFT	14:48
Dell Latitude, 2 NiMH batteries DX2/50 STN	12:15

OLD RECORD FOR 486 MONO:	12.07
IBM ThinkPad 350C (SL/25) passive	8.50
IBM ThinkPad 500 (486/4c) mono	6.30
Toshiba T4800cr (DX4/75) TFT	3.30
IBM ThinkPad 755Cs (DX4/75) passive	5.00
Compaq Contura 4/25 (SL/25) passive	4.32

**Hot swappable Type II
and III PCMCIA slots**
and Dell configuration
software let you swap most
PCMCIA goodies at will.

Our unique and easy-to-use **Power Management software**, along with the latest in high performance and low power components give you longer battery life.

Scannable hard drives

make it easy to share a Latitude XP without having to share all your files



The industry's only **Smart Lithium Ion battery** with a built-in microprocessor gives you 8 strong hours of use.

External expansion via our **Advanced Port Replicator** means your Latitude XP turns into a desktop when you get back to the office.

1MB video RAM with 32-bit local bus means faster video performance.

For programs requiring major RAM, we offer **RAM expansion up to 36MB** on the Latitude XP.

EIGHT HOUR
BATTERY LIFE

DELL

THE DELL LATITUDE. COOL. FAST.

\$3399

- BUSINESS LEASE: \$124/MO.
• 9.5" DUAL SCAN STN COLOR
• 8MB RAM (36MB MAX RAM)
• 340MB HARD DRIVE
• NEW SMART LITHIUM ION BATTERY
• 3 YEAR LIMITED WARRANTY
• 30 DAY MONEY BACK GUARANTEE
ORDER CODE #600011

\$4299

- BUSINESS LEASE: \$155/MO.
• 9.5" ACTIVE MATRIX TFT COLOR
• 8MB RAM (36MB MAX RAM)
• 340MB HARD DRIVE
• NEW SMART LITHIUM ION BATTERY
• 3 YEAR LIMITED WARRANTY
• 30 DAY MONEY BACK GUARANTEE
ORDER CODE #600012

\$4799

- BUSINESS LEASE: \$174/MO.
• 9.5" ACTIVE MATRIX TFT COLOR
• 8MB RAM (36MB MAX RAM)
• 340MB HARD DRIVE
• NEW SMART LITHIUM ION BATTERY
• 3 YEAR LIMITED WARRANTY
• 30 DAY MONEY BACK GUARANTEE
ORDER CODE #600013

CALL NOW

800-456-5777

In Canada, Call 800-668-3021

Mon-Fri 8am-8pm CT • Sat 10am-4pm CT • Sun 1pm-4pm CT
In Mexico City, Call 800-258-7881 Keycode #111805

DELL

Desktop Computing

VideoLogic, Inc. has announced PCI-Movie, a multimedia and Windows accelerator with Video Electronics Standards Association Media Channel compatibility.

According to the Cambridge, Mass., company, PCI-Movie provides high-quality, full-screen video playback and high-

performance graphics acceleration in one board. Users can scale postage-stamp-size video clips up to full screen without a reduction in frame rate or degradation of quality.

PCI-Movie supports 24-bit true color for photo-realistic images and resolutions of up to 1,280 by 1,024 pixels for extra space on the desktop.

PCI-Movie costs \$499.
► *VideoLogic
(617) 484-0539*

Geno Systems Corp. has announced the Phantom 64 graphics accelerator. According to the San Jose, Calif., company, Phantom 64 displays accelerated true color 24-bit images with a refresh rate of 100 MHz.

The product is available in both Peripheral Component Interconnect and VLB-bus models with either 1M or 2M bytes on board.

The board powers down Video Electronics Standards Association-compliant monitors and simulates 1,600- by 1,290-pixel resolutions on lower-resolution monitors.

The Phantom 64 costs \$249.

► *Geno Systems
(408) 432-9090*

Olivetti Canada Ltd. has announced the 100 Supravox family of PCs.

According to the Markham, Ontario, firm, the PCs feature Peripheral Component Interconnect local-bus architecture, integrated business radio, fax and modem facilities and enhanced graphics capabilities.

The models include Intel Corp.'s Pentium or i486 processors and energy-saving features and come in two sizes, depending on space, with up to five bays and five slots.

Prices start at \$3,499.
► *Olivetti Canada
(905) 477-2550*

Evergreen International Technology Inc. has announced Evergreen Notes 1.0A for Windows, an annotation utility.

According to the Vancouver, British Columbia, company, Evergreen Notes lets users attach messages to electronic documents and software in the same way as stick-on notes. The messages can be written or verbal.

Users can attach voice corrections directly to documents or add additional instruction to training applications.

Evergreen Notes 1.0A for Windows costs \$69.

► *Evergreen International
Technology
(604) 986-6121*

Panasonic Communications and Systems Co. has announced the KV-SP500 series, a combination scanner and printer unit for high-speed document imaging applications.

According to the Secaucus, N.J., company, the KV-SP500 compresses and stores text and images in a computer's memory via an image processing board, processing documents at 40 pages per minute.

The scanning function offers user-selectable resolutions of 150 to 350 dpi, and the printing function produces 300 by 300 dpi output.

The product includes either a simplex unit or a duplex version for two-sided scanning.

Price range from \$5,499 to \$6,499.
► *Panasonic Communications
and Systems
(201) 345-7000*

Those who swear by their systems choose their language carefully.



In today's highly competitive commercial marketplace, system errors can be catastrophic.

That's one reason why Ada has become the language of choice for developers of large, complex applications worldwide.

Ada has the tools to find mistakes. The language's inherent readability ensures that an error is easily understood, and is therefore quickly rectified. What's more, the compilers will stop, rather than allow incorrect code to go through. And program parts that you know to function correctly can safely be re-used. Think of the money you save by catching errors early, fixing them easily, and re-using what you know works.

For a free kit containing a catalog of industry resources, some information on commercial Ada usage that may surprise you, and a summary of how Ada is evolving for the future, call the Ada Software Alliance at 800 380-4ADA.

Ada

The Language For A Fail-Safe World

TRI-Ada '94

Conference & Exhibition Nov 7 - 11, Baltimore
800 833-7751 508 443-3339

SAVE MONEY
RECRUITING
STAFF.

Advertise in Computerworld's regional Careers pages.
They work.

800 343-6474, x201
Call for our free Recruiting Kit!

HEWLETT-PACKARD NETSERVERS.



Monitor disk space down the hall.



Check error logs and diagnose your server across campus.



Power cycle the server in Kalamazoo.



Open a window on the world.

MANAGE EVERYWHERE, FROM ANYWHERE.

U.S. list price effective 7/1/94. *U.S. list price for HP NetServer 4800 LF Model 1 including 32-MB Intel486 DX2, 16-MB RAM. ****U.S. list price for HP NetServer 4800 LC Model 1 including 32-MB Intel486 DX2 and 8-MB RAM. Prices subject to change without notice. Intel486 DX2, 1034 and Pentium are trademarks of Intel Corporation and the Intel Inside and Pentium Processor logos are registered trademarks of Intel Corporation. ©1994 Hewlett-Packard Company. PPN#00



HP NetServer LM • 90-66-MHz Intel Pentium® processor, 66-MHz Intel486® DX2 processor • Dual Intel Pentium

66-MHz Symmetric Multiprocessing (SMP) • Optional internal hot swap disk array (RAID 0, 1, 5, 6) and ECC memory

• HP NetServer Assistant 2.0 included • 16-MB RAM standard, 384-MB maximum • Up to 256-KB write-back cache

• 9 mass storage shelves • 8 EISA bus-master I/O slots • Integrated EISA Fast SCSI-2, IDE and video controllers

• Designed-in security, serviceability, and cooling features • Tested and certified on all major network operating systems

HP NetServer LF • 66-MHz Intel Pentium processor, 100-MHz Intel486 processor, 66-MHz Intel486 DX2 processor • Automatic Server

Restart • HP NetServer Assistant 2 included • Optional internal hot swap disk array (RAID 0, 1, 5, 6) • 8-MB and 16-MB RAM standard,

192-MB maximum • 256-KB write-back cache • 3 mass storage shelves • 2 PCI, 7 EISA bus-master I/O slots • Integrated EISA Fast SCSI-2,

IDE and video controllers • Designed-in security, serviceability, and cooling features • Tested and certified on all major network operating systems

HP NetServer LC • 66-MHz Intel Pentium processor, 100-MHz Intel486 DX2 processor, 66-MHz Intel486 DX2 processor • Automatic Server

Restart • 8-MB and 16-MB RAM standard, 192-MB maximum • Up to 256-KB write-back cache • 1 PCI, 1 PC/VESA combo, 4 ISA I/O slots

• 5 mass storage shelves • Integrated EISA Fast SCSI-2, IDE and video controllers • Designed-in security, serviceability, and cooling features

• Tested and certified on all major network operating systems

Management Selections: **HP Remote Assistant** • \$399 for intelligent EISA card and software • Complete remote control of server

• Continual environmental and server hardware monitoring and error logging • Automatic Server Restart • Works on all major network

management environments **HP NetServer Assistant 2.0** • Included with HP NetServer LM and LF. \$499 option for HP NetServer LC

• A customizable server management software tool set • Provides system/component alerting and status information • Includes HP

OpenView 7.1 • Comprehensive troubleshooting tools

HP Services and Support • A full range of support services from HP or HP-authorized resellers • Three-year, on-site,

next-business-day limited warranty standard on all products; affordable upgrades to same-business-day or 24-hour.

7-day, 4-hour response • Complete technical and support information available through a wide range of media

HP Support Assistant CD-ROM subscription, fax-back service, BBS, CompuServe forum and telephone support



HP NetServer LM from \$4,449*



HP NetServer LF from \$3,249**



HP NetServer LC from \$2,529***

Now you can be everywhere at once. Without going anywhere.

HP NetServers are easy to manage even when you're not there.

With today's increasingly complex networks, it seems LAN managers depend more on their beepers and the corporate travel office than anything else. Go here, go there, fix this, fix that. Leaving no time for the kind of proactive work that could avert trouble in the first place.

Maybe that's why so many network administrators are turning to the affordably priced lineup of HP NetServers. Take a quick look, and you'll find optimized price/performance servers to match every need. But you'll also discover how to answer your need for servers that are easier to manage.

HP NetServer Assistant software helps you prevent problems before they occur—and gives you tools to resolve them if they do. And because it supports the HP OpenView platform, you can access your entire network from a single console. With HP Remote Assistant, you can manage the server from anywhere, even if it's down. Even if the network's down.

Performance? You can choose from single

and dual Pentium® models, as well as those with Intel486® DX2 and DX4 processors. For compute-intensive applications, you'll want to look at the HP dual Pentium Symmetric Multiprocessing model. Whatever you select, you'll enjoy maximized uptime, thanks to RAID-based fault tolerance, hot swappable drive replacement and error checking and correcting memory.

Perhaps best of all, HP NetServers come to you from the company with an unparalleled reputation for quality, reliability and support—Hewlett-Packard.

Which is undoubtedly why we can offer one of the industry's best warranties: three-year, next-business-day, on-site delivered by HP or your reseller.

For more information on HP NetServers, call us today at 1-800-533-1333, Ext. 8439. And the next time you feel a need to go somewhere, make it a vacation.

Another smart networking product from HP.



With HP NetServer Assistant 2.0 you get intuitive viewing of your network, comprehensive diagnostics, plus local and remote management, all in one package.

hp HEWLETT®
PACKARD

Northrop's conversion project takes flight

Commercial Aircraft Division switches from legacy system to Unix-based operation

By Jean S. Bozman
HARTFORD, CALIF.

When Northrop Grumman Corp.'s Commercial Aircraft Division logs off its mainframe applications for the final time next month, it will serve as a downscaling model for other departments in the \$5.25 billion aerospace giant. The division's move to open systems may save as much as 60% in ongoing information systems costs, according to some company estimates.

"If one goes, it'll be a domino effect," predicted Jim McCann, director of information technology management at Northrop Grumman. But first, there will be a formal evaluation of the project, which converted legacy applications from mainframes and minicomputers to Unix applications running on Hewlett-Packard Co. servers and Oracle Corp. 7.0 database databases.

The aircraft division's yearlong conversion of legacy applications as well as operations of the former Grumman Corp. in Bethpage, N.Y., will be closely studied by the military aircraft divisions that build the B-2 Stealth Bomber and portions of the F/A-18 aircraft.

Planning ahead
The open systems initiative began last year before \$5 billion Northrop acquired \$3.25 billion Grumman in May. "We put together an information technology plan for the corporation last year, the objective of which was to lay out our strate-



Project leader Joe Dugan oversees Northrop's conversion effort

FYI
Northrop Grumman
revenue data May 1994
Revenue: \$8.25 billion
for Northrop and
Grumman combined in
1993
Employees: 44,000
IS employees: Roughly
2,000

maintenance of aging mainframe code and mainframe data center operations, McCann said.

g for moving from the mainframe [to distributed] systems," McCann explained.

Cost savings was a strong motivation, but there was also a desire about industrial-strength Unix software. "We wanted to prove to ourselves that we could do this and create in this environment," McCann said. "Certainly, we went into this with the intention that we wanted to reduce costs not only in [data processing] costs but by having more efficient business processes."

The aircraft division, which makes the 153-ft-long main fuselage for The Boeing Co.'s 747 aircraft, will run its business on eight HP 9000 Series 900 Unix machines used as Oracle database servers and 20 HP 9000 Series 700 workstations that run the firm's manufacturing and financial applications. The aircraft division — which has 1,500 employees and accounts for about 3% of Northrop Grumman's IS budget — purchased \$7 million worth of HP equipment and software for the project.

Re-engineering is bound to reduce the company's inventory of six IBM and IBM-compatible mainframes. McCann plans to reduce that number to seven as some of the mainframe leases run out. "We absolutely want to get rid of at least two in the next couple of years," he said. The largest portion of ongoing IS costs stems from maintenance of aging mainframe code and mainframe data center operations, McCann said.

The aircraft division's applications only needed one-eighth the MIPS of one IBM ES9000, McCann said. And many of the aging IBM mainframe applications were replaced by off-the-shelf software, including the Oracle Financial and Manufacturing software suites.

But programmers had to rewrite a factory management application that first ran on a Digital Equipment Corp. VAX computer and was ported to another Unix machine, as well as a mission-critical express factory system that ran on a Transient Computers, Inc. machine with 1 million lines of Cobol code.

User participation

Users were brought into the design process to ensure applications met business needs as well as, or better than, the legacy software. After the conversion is completed, only eight employees will help run the system.

"The users are getting a little more involved in systems issues," said Mike Bek, co-project manager for the Oracle-based manufacturing applications. "We're setting up our own user groups for data access and helping end users with questions about their applications."

To use the packaged Unix applications, programmers had to convert data stored in the IBM mainframe's IMS database to the Oracle 7.0 relational database. That process took two months, said Pattie Gerlon, an automated systems analyst who helped manage the project.

Rewriting the custom legacy systems was accelerated through the use of rapid application development planning techniques, said Joe Dugan, business systems program manager for the aircraft division. Dugan was project leader for the 18-person conversion effort. Additional help came from Oracle software consultants and a team from International Integration, Inc. in Los Angeles.

ON SITE

Northrop
Grumman Corp.
Bethpage, Calif.

Challenge: To reduce IS costs by developing legacy mainframe applications to Unix-based servers running standard databases.

Solution: To use rapid application development planning techniques to convert legacy applications from IBM mainframes and Transient Computers, Inc. machines.

Results: The transition from the IBM mainframe is expected next month. Applications will move closer to users, who will help administer the Unix systems. Multiple HP Unix servers, workstations, 23 mainframes and an Oracle 7.0 database have been installed. HP's OpenView network management system will be used.

Network operating systems

Novell takes bite out of NetWare upgrade costs

By Elisabeth Horwitt

Novell, Inc. recently announced a series of promotions designed to coax users into moving up the network operating system ladder from the virtually defunct NetWare 3.x to NetWare 3.12 — and from there, moving up to the enterprise-oriented NetWare 4.0.

The promotions followed an initiative announced earlier this year that offered users a 25% discount if they upgraded to NetWare 4.x or 3.12 by July 31.

As part of this latest round, Novell did the following:

- Reduced the cost of upgrading to either NetWare 3.x to 4.x by an average of 15%;
- Reduced the cost of upgrading to NetWare 3.x or 4.x from rival network operating systems, such as IBM's LAN Server, Microsoft Corp.'s

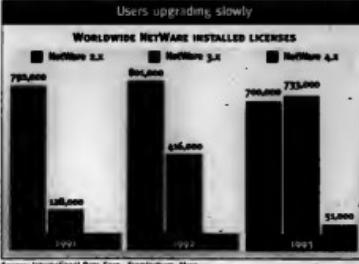
Windows NT Advanced Server and Banyan Systems, Inc.'s Vines.

• Added Novell's Personal NetWare and other peer-to-peer products to the upgrade program.

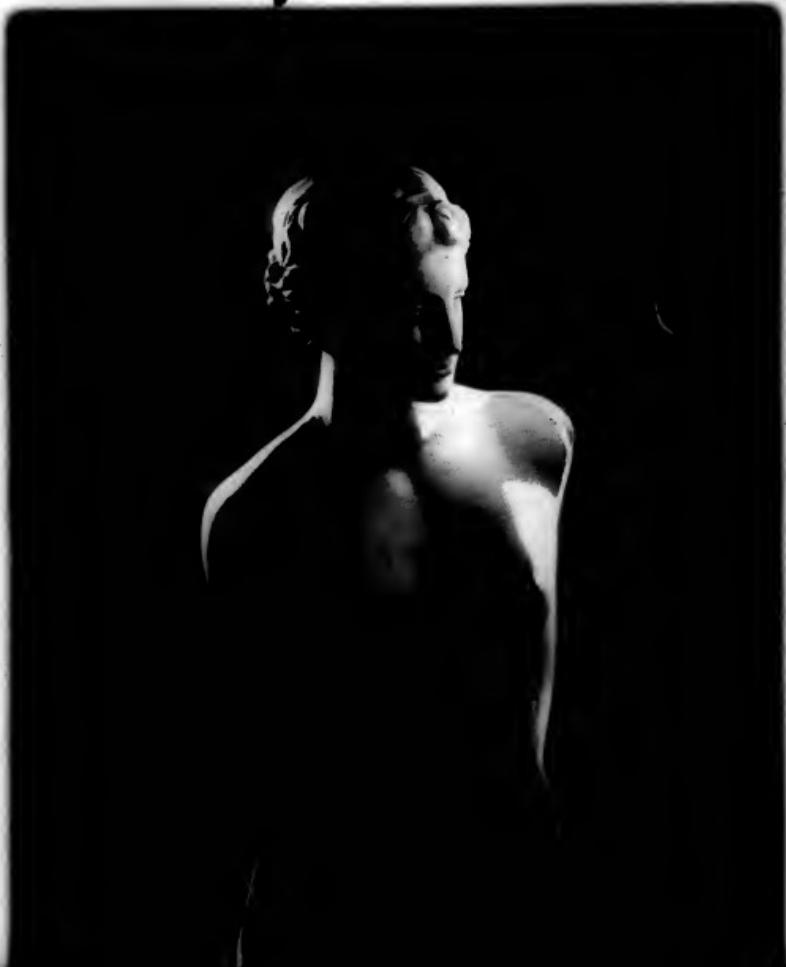
• Offered users the option of consolidating user licenses when they upgrade. For example, combining four 25-user NetWare 3.12 licenses with a single upgrade to a 100-user NetWare 4.0.

Novell also announced that users who purchase an upgrade to NetWare 3.x or NetWare 4.x (10-user version or higher) by Oct. 31 will receive a free copy of Novell's GroupWise 4.1. The product was formerly WordPerfect Office, the workgroup and messaging NetWare Loadable Module sold by recent Novell acquisition WordPerfect Corp.

The CW Guide to Network Operating Systems: page B8.



No Matter How Attractive
They Mean Nothing



The Individual Features, If You Can't Connect.

Connecting. It's really what the world is all about. The need to make contact, to work in concert, to be connected, is becoming more critical every day. At Zenith Data Systems, we not only recognize that fact, we're proud to be playing a major part in making it a reality.

As the world continues to shrink, so do corporate computing resources: moving from "glass rooms" to office floors, to desk-tops, to laptops, to briefcases—and soon to pockets and purses. And a whole new breed of highly skilled and highly mobile workers is coming on-line to use them.

They work in workgroups that are both real and virtual. They need real-time, full-time, on-line access to all of their company's resources—whatever they are, wherever they are, and whenever they need them. And above all, they need computers that are as much communication devices as data- and word-processing devices.

At ZDS, we call this phenomenon Connected Computing. It's the core of an entirely new view of technology—one

that addresses the numerous concerns of the individual, but also provides solutions for workgroups and enterprises. We're pioneering a new class of computing products designed to answer the needs of the business environment. Every ZDS product shares a common birthright: they're built to help people work together better. To get their jobs done faster. To get and stay connected.

And those better connections go beyond our products. We maintain strategic relationships and cooperative development agreements with major software vendors, peripheral manufacturers, and microprocessor designers. All to make sure that our computers don't just work better than all the rest, but also work better with all the rest.

Make the connection with us today, and find out how Connected Computing can give your company a competitive edge. We think that's a concept you can really get your arms around.

1-800-289-1320, Ext. 5103



From high-performance servers and network-ready desktops, to an award-winning line of notebook and subnotebook computers, ZDS products help people connect.

ZENITH ■
DATA SYSTEMS

MAKE THE CONNECTION™

Copyright © 1991 Zenith Data Systems Corporation. Zenith Data Systems Corporation is a Bell company. ZDS and "Make The Connection™" are trademarks of Zenith Data Systems Corporation.

When's the best time to upgrade your network and get a \$4,700 workgroup productivity pack, Free?



Lotus opens books on SmarText 3.0

By Tim Ouellette

SmarText 3.0, Lotus Development Corp.'s electronic book software, has hit the streets offering added Notes integration, table support, customization capabilities and multimedia support.

SmarText 3.0, an upgrade to SmarText 2.0, provides users with on-line access to large manuals in a book format complete with text, graphics, a table of contents and hypertext links. New features include integration with Notes, support for tables created in word processing applications, support for Microsoft Corp.'s Object Linking and Embedding, enhanced viewing customization tools and an improved bookcase for document storage.

Ablard Controls in Tucson, Ariz., a systems integration company, uses SmarText to prepare applications that would guide operators through a manufacturing process in an emergency.

"We have piles of documentation," said President Mitch Dohson. "It is very easy to stack it all up on a table 3 to 4 feet high."

With operator staffs low or training budgets slashed, Ablard's clients find the availability of a quick, on-line resource of information on how to handle urgent situations important, Dohson said.

According to Lotus, SmarText takes documents from any word processing application and creates an electronic book with full text-search capabilities and formats for the computer screen.

Hewitt and Associates, a consulting and actuarial firm in Lincolnshire, Ill., has used almost every import function that SmarText 3.0 allows, said Alex Gerzon, a member of the firm's Technology Evaluation Group.

Hewitt employees manage pension

plans that average about 1,500 pages each. The company installed SmarText to consolidate these plans and related documentation into electronic books. Gerzon said each employee now has access to and manages up to 200 plans and needs only a minute to answer a client's question, compared with five minutes for a manual search.

"SmarText is going to start being used more when people realize how much information overload they are having," Gerzon said.

Worldwide market

Along with Folio Corp.'s Views, Electronic Book Technologies' Dynystax and IBM's BookManager, SmarText 3.0 is part of the estimated \$32.8 million publishing segment of the worldwide text retrieval market, according to Delphi Consulting Group in Boston. Revenues for the segment are expected to reach \$44.2 million a year by 1995.

Carl Prappasolo, an analyst at Delphi, noted that the segment's growth depends on how quickly organizations realize they need publishing applications as opposed to industry-specific applications.

With Notes integration, Lotus hopes to provide a complete package for companies to deliver and view documents online. SmarText 3.0 lets users create links from the large, archival SmarText documents to Notes documents. From Notes, SmarText documents can be launched or distributed among workgroup users. SmarText 3.0 is available now and is made up of two components: Builder, which converts documents into electronic book format, and Reader, which lets users view the books online. Builder sells for \$495; Reader costs \$99. A CD-ROM version is due out later this year.

Briefs

EDS wins Hughes deal

Electronic Data Systems Corp. won a five-year deal to provide distributed systems management for Rolls-Royce, General Motors Corp. and Hughes Space and Communications Co. EDS will manage 4,000 desktop systems and Hughes' LAN-based networking environment. EDS said it beat out AT&T Corp., Computer Sciences Corp., Digital Equipment Corp., Hewlett-Packard Co. and IBM's integrated Systems Solutions Corp. subsidiary. It did not disclose the value of the deal.

PictureTel goes continental

IBM Europe signed on to market PictureTel Corp.'s desktop videoconfer-

encing system in eight European countries, including the UK, France and Germany. The PictureTel system includes IBM's Person to Person information-sharing software, which was developed at the company's software lab in Hursley, England.

SGI visits Disney

Silicon Graphics, Inc. (SGI) announced that its Unix servers and graphics accelerators were used to create an interactive virtual reality show set to open at The Walt Disney Co.'s Epcot Center in Orlando, Fla., this fall. The interactive amusement ride, based on Disney's animated feature film *Aladdin*, was created with systems previously used to build flight simulators, said Mike Ramsay, senior vice president of SGI's Visual Systems Group.

Workgroup Computing

Percussion Software has introduced Notes 1.0 and Notes Composer 1.0, software for Notes.

According to the Boston firm, Notes lets users manipulate Notes data without the Notes application programming interface or C programming. Instead, it implements an extended version of IBM's Rexx language that works with Notes.

Notes Composer 1.0 is a nonprogramming tool for defining bulk data movements between enterprise databases and Notes. The product lets users map fields, select records, calculate new fields and determine job frequency.

Notes 1.0 costs \$3,495, and Notes Composer 1.0 costs \$4,495.

► *Percussion Software
(617) 267-6700*

Delphi Consulting Group has announced The Workflow Factory, a product-independent diagramming tool for workflow, re-engineering and business process redesign.

According to the Boston company, The Workflow Factory handles sophisticated graphical definition and captures all the data necessary to define a process using tables linked to each element of the diagram. All information accumulated about processes can be exported to a workflow database or to a spreadsheet or other tool for more analysis.

The product ships with boilerplate workflows, preconfigured icons and tables analogous to workflow.

The Workflow Factory costs \$395.

► *Delphi Consulting Group
(617) 847-1611*

Desktop Data, Inc. has announced NewsEdge/Notes Release 2.0, news processing software for enterprise applications in Notes.

According to the Waltham, Mass., company, NewsEdge/Notes Release 2.0 lets Notes users define custom news tracking criteria and receive the most current information on their PCs. The news can then be integrated into Notes databases and applications.

Custom electronic subscription templates are provided for specific publications to provide the look and feel of the actual paper or magazine. The package includes access to numerous news services.

Prices range from \$27,000 per year for 50 users to \$125,000 per year for 5,000 users.

► *Desktop Data
(617) 690-0012*

Delrina Corp. has announced WinFax Pro 4.0 for Networks, workgroup fax software.

According to the Toronto firm, WinFax Pro 4.0 for Networks lets users send, receive and manage faxes from their PCs using one or more standard fax modems on a network.

The product lets PCs act as stand-alone clients so they can access network fax modems as if they were hardware connected to the PC. Electronic-mail

messages can be managed the same way as faxes through support for Microsoft Corp.'s Mail and Lotus Development Corp.'s CC-Mail.

WinFax Pro 4.0 for Networks operates in either a dedicated or nondedicated server environment.

Prices range from \$179 to \$4,239, depending on the number of users.

► *Delrina
(416) 441-3676*

Image Business Systems Corp. has announced IBS Flowmaster, workflow software.

According to the New York firm, IBS Flowmaster lets users design, manage and control mission-critical business applications.

The product is made up of FlowManager and FlowController. FlowManager automates and manages business processes. FlowController provides tools for runtime work load and performance monitoring, work load balancing and resource utilization.

IBS Flowmaster runs on the IBM R5/6000 and includes object-oriented paradigms, user-defined workflow attributes and dictionaries and more than 50 high-level workflow application programming interfaces.

Prices range from \$40,000 to \$150,000, depending on the number of users.

► *Image Business Systems
(212) 696-2500*

American Power Conversion has announced PowerChute Plus for Notes running on Novell, Inc. NetWare servers.

The West Kingston, R.I., company said PowerChute Plus for Notes running on NetWare servers provides unattended shutdown of Notes servers in the case of an extended power interruption.

Other features include automatic uninterruptible power supply (UPS) testing, configurable UPS control and scheduled system shutdown.

PowerChute Plus for Notes running on NetWare servers costs \$99.

► *American Power Conversion
(401) 759-7375*

Product shorts

On-Demand Software, Inc. has introduced WinInstall 4.0, network application distribution software.

The product lets users select applications from a scrollable list and then installs a Windows start-up or sends applications as self-installing attachments via electronic mail. Cost: \$495 for unlimited users. On-Demand Software, Naples, Fla. (813) 261-0678... SQL Software, Inc. has announced PCMS Helpbench, a help desk product for Notes targeted at internal help desk and customer-support users. It tracks customer calls and problems and can be used in the testing cycle to manage incidents and defects. Cost: \$795 per user. SQL Software, Vienna, Va. (703) 760-0448... VocalTec, Inc. has announced VocalChat 2.0, office communication and messaging software. VocalChat 2.0 includes an audio conferencing service. Cost: \$229 per 10-user license. VocalTec, Northvale, N.J. (201) 765-9460.

Now.

If you're planning to upgrade your network sometime in the future—the future has just arrived.

Novell has pulled together a tremendous offer to make it cost-effective for you to upgrade to either NetWare 3.12 or NetWare 4.02 right now. So whether you're moving from peer-to-peer to client-server or want to expand the performance and capabilities of your current system, Novell has the most proven, advanced network operating systems available. All at upgrade prices that have just been reduced.

What's more, when you upgrade any network to NetWare 3.12 or 4.02 for ten or more users by October 31, you'll get Novell's workgroup productivity package worth \$4,700—free. The pack includes GroupWise™ (formerly WordPerfect Office), the most comprehensive E-mail, scheduling and calendaring, task management program, plus a Message Server NLM and MHS NLM Gateway. So call 1-800-BUY NOVL or your local Novell reseller to find out more. Because there's never been a better time to upgrade your network and workgroup productivity.

NOVELL

The Past, Present, and Future of Network Computing

CALL 1-800
BUY NOVL

INTRODUCING A COMPUTER WELL ENGINEERED, ACTUALLY IMPROVES WI



TER SO IT TH AGE.



One of the most impressive features of the Deskpro XL is its future. Its upgradeability, expandability and flexibility make it the other Compaq engineering obsession: all designed to protect your investment.

If you use a powerful computer, you know how it works. The day you bought your last machine was the day you started thinking about your next one. For that reason, we'd like to introduce you to a computer you can always look forward to—the new Compaq Deskpro XL.

Basically, we've designed the Deskpro XL to be everything you could ever want in a high-

performance desktop computer.

A new high at the high end. So not only did we build in our own industry-leading technologies, we added the flexibility and expandability that will make it possible for you to take advantage of advances still to come.

It's obvious. Spectacular graphics capabilities are built into the Deskpro XL, combined with the FISA Advanced Feature Controller, let the green geek for high-end design work and video conferencing.



Deskpro XL's powerful PCI local bus, with integrated 32-bit



It's fast. Oh, no! It's fast. And the good news is, it will only get faster. The Deskpro XL's advanced architecture makes it easy to upgrade to future processors — or you'll be able to buy more speed without buying a new computer.

Fast SCSI-2 and Ethernet capabilities, lets you add the most advanced features—while its EISA slots offer compatibility with the thousands of existing

options. You also get super-fast QVision PCI graphics with crisp 1280 x 1024 resolution. So with the Deskpro XL, you enjoy maximum performance today, with a door wide open for future growth.

Standard equipment, of course, includes the Compaq commitment to quality, dependability and value. Which comes in the form of our free three-year warranty¹ and our free seven-day,



Our #1 customer support has a hand in speakers, microphone and controls for Business Audio — so the complete power of business communication will always be right at your fingertips.

24-hour support.



The Deskpro XL starts at \$2,599² and is available now at your nearest-

authorized Compaq reseller. If you'd like more details via fax, call us at 1-800-345-1518, select the PaqFax option and request document #4052. You'll find that the future has never looked better.

COMPAQ

©1990 Compaq Computer Corporation. All Rights Reserved. Compaq and Deskpro Registered U.S. Patent and Trademark Office. PaqFax is a service mark of Compaq Computer Corporation. Microsoft Word is a registered service mark of Microsoft Network Inc. Postnet and the PostNet logo are registered trademarks of PostNet Corporation. *Certain restrictions and exclusions may apply. Monitors, barcodes pads and certain options are optional. Call your reseller. Call the Compaq Customer Support Center and select the PaqFax option for more details. ¹Compaq selling price is retail pricing only. ²MSRP.





► FALCONBRIDGE LIMITED RELIES ON A BANYAN SYSTEM TO KEEP ITS 1.4 BILLION DOLLAR INTERNATIONAL MINING ENTERPRISE IN CLOSE COMMUNICATION •



"We keep a bird's eye view of all our worldwide operations."

"With an organization as diverse and far-ranging as ours, sharad information is a resource

that's vital to our oparations."

Mark Paasi's office is in Sudbury, Ontario, but he reaches out to the world - from Canada to Norway to the Dominican Republic and beyond. "Global communication keeps Falconbridge on the map. Our strength comes from letting our worldwide operating, exploration and sales units operate independently, while staying closely linked to each other."

Banyan's Enterprise Network Services is the solution that can truly support the company's decentralized business philosophy. From Bonao to Brussels, across an environment that includes 20 minis and 2,000 PCs on LANs running VINES[®], NetWares[®], TCP/IP and AppleTalk[®], all users enjoy a 'single system' network view. They can instantly access all network resources, applications and databases. And, thanks to worldwide e-mail, they can access each other."

If you're facing the challenge of global communications, Banyan has answers you should know about: ENS[®] for NetWares, HP/UX[®], SCO[®] UNIX[®], and VINES. To receive your free Enterprise Networking Kit, call 1-800-828-2404.



Call or write for our free Enterprise Networking Kit, including "Delivering E-Mail to the Enterprise," or contact your Banyan Premier Network Integrator.

Name _____

Company _____

Address _____

City _____ State _____ Zip _____

1-800-828-2404

Banyan Systems Inc., 120 Flinders Rd., Westboro, MA 01581



Banyan and the Banyan logo are registered trademarks of Banyan Systems Incorporated. Other trademarks are property of their respective owners.

Enterprise Networking

ROUTER PRIORIZES
SNA TRAFFIC OVER LAN, 60

Stan Schatt

Developing for the customer: What a concept



Have you ever asked yourself why computer networking companies seem to be so out of touch with your firm's particular needs? I thought so. Remember the movie *Field of Dreams*, in which a young Iowa farmer plants his corn field under, convinced that if he builds a baseball field, Shoeless Joe Jackson will come to play ball?

Today, a field of dreams mentality pervades major networking companies. Engineers develop products with the conviction of religious zealots, believing customers will clear store shelves and clamor for more once these products are released. Their credo is, "Buy the product, and the customers will come."

What it must test to do these products developers use to determine the success of a product? Themselves, of course. Imagine a Generation X engineer developing a new file server or PC-based videoconferencing system. "George, isn't this great? The server is running at 100%

Schatt, page 69

Cisco sees switching in its future

Router vendor's president discusses \$1B firm's product mix, financials

"Explosive" may be too tame to describe the growth of Cisco Systems, Inc., the Menlo Park, Calif., router provider closed its fiscal year late last month with revenue expected to top \$1 billion, compared with \$5.5 billion just six years ago.

Cisco's feisty and energetic president, John P. Morgridge, has presided over most of that growth, including the 1994 acquisitions of switchmaker Crescendo Communications, Inc., and low-end router vendor Newport Systems Solutions. However, Cisco's stock bottomed out last month following cautious forecasts for fourth-quarter earnings. Morgridge recently spoke with Computerworld Editor Paul Gillin at Cisco's Palo Alto, Calif., facility.

Q: How do you plan three years out in a business like yours where all bets are off right now?

A: It's not possible to see three years out in our industry. You have to acquire fundamental capabilities to compete in the market as it changes. The Crescendo and Newport acquisitions were critical to that. The product life cycles are about 18 months right now. We have to develop the ability to [get products certified in] parallel all over the world. That can save six to 12 months of time in some countries.

Q: How will you cover yourself as the hub, router and switching markets converge?

A: Switching technology will be an important part of the fabric of the future. It's important that we develop products there. But switching is as much a threat to shared backbone hubs as it is to the routing environment. As we build switched fabrics, the requirements of routing are still applicable. Remember that we

don't just route a protocol; we take a protocol designed for one environment and make it work in another environment.

Q: How aggressively will you try to exploit converging surrounding The Wellfleet Communications Inc./SynOptics Communications Inc. merger?

A: The Wellfleet/SynOptics relationship is a challenging factor in our relationship with many of our current customers. On a surface level, this consolidation makes a lot of sense. At a product level, it's not so natural. We've had a lot of experience embedding products with our own, like Wellfleet and SynOptics are going to have to do, and we've found that the bigger the project, the harder it is to pull off and keep all the pieces at a reasonable level.

My sense is we'll see a convergence of routing technology around switches and a shared environment moving from hubs into switches. Hub and switch companies will converge. This merger presents opportunities and challenges. We've had a working relationship with SynOptics, and if this destabilizes it, it makes it very hard for the customer.

I look at this like the divorce of two friends. Once they divorce, it's very hard for you to maintain a relationship with either one. Yes, we see this as an opportunity, particularly where the customer has not made a hard decision on a hub. We can say, "Hey, we provide a choice. With those guys, you don't get that."

Q: You've said in the past that your strong point is focus. How can you keep focused if you have to compete in all these markets?

A: We are not going to attempt to develop a broad-based hub

Morgridge, page 69



Cisco's John P. Morgridge: "We will emphasize switching products over the broad scale."

a working relationship with SynOptics, and if this destabilizes it, it makes it very hard for the customer.

I look at this like the divorce of two friends. Once they divorce, it's very hard for you to maintain a relationship with either one. Yes, we see this as an opportunity, particularly where the customer has not made a hard decision on a hub. We can say, "Hey, we provide a choice. With those guys, you don't get that."

Q: You've said in the past that your strong point is focus. How can you keep focused if you have to compete in all these markets?

A: We are not going to attempt to develop a broad-based hub

Morgridge, page 69

Interactive TV comes to public broadcasting

By Ellis Boeker

By the middle of next month, viewers of ETV, Vermont's public television station, will be able to log onto an electronic resource and download news and information related to their favorite programs. They will also be able to fetch community interest bulletins or newsmail.

ETV Online is the first test of PBS Online, a package of electronic services being developed by the Corporation for Public Broadcasting in Washington.

"Within a year we'd like to have 400 subscribers, which would include private individuals and schools," said Ann Curran, ETV's marketing and communications manager in Burlington, Vt.

Almost 200 public television stations around the country already communicate with one another over an internal system, called PBS Express, which came out last November. The interactive PBS Express replaced an early broadcast system that sup-

ported only text transmissions.

Another system, called PBS Learning Link, offers education-related information targeted at teachers, child-care providers and parents. It is offered by 22 stations to some 37,000 users. These sites will roll over to the PBS Online platform this year.

Artificially intelligent

"From the national level, our content focus will be things linked to our programs," said Molly Breeden, PBS Online marketing manager. The most interesting interactive applications are being developed in conjunction with the local stations, she said.

WMHT in Schenectady, N.Y., for instance, has helped develop Baseball Online, which will link to an upcoming series on America's favorite pastime. Baseball Online will contain interactive trivia as well as lesson plans and research data for students.

"We want our producers to evolve from video producers to content providers,"

Breeden said.

"We see it as a really important wedge," Curran agreed.

PBS Express, Learning Link and PBS Online are the fruits of a broader network upgrade at PBS affiliates, which added VSAT terminals and Apple Computer, Inc. Quadra 630 servers for about \$40,000 per station.

The PBS Online pilot will start small, with just four to eight 14.4K bps/sec. modem lines. Subscribers will be able to log on using conventional communications software. ETV is also testing a graphical user interface-based product called FirstClass from SoftArc, Inc., in Scarborough, Ontario.

ETV also plans to offer Internet mail service, although not full Internet access. About eight of the 22 PBS affiliates that now offer the Learning Link application have plans to offer direct Internet access.

Pricing for ETV Online has yet to be determined, but station officials said it will be "reasonable." Also, the service might use the station's current network infrastructure — which connects four transmitters — as a way for subscribers to dial in without incurring long-distance charges.



**PBS
ONLINE**

link to an upcoming series on America's favorite pastime. Baseball Online will contain interactive trivia as well as lesson plans and research data for students.

In April, the Corporation for Public Broadcasting, in partnership with US West, awarded \$1.2 million to 12 community computing networking projects. The awards, chosen from 50 proposals submitted by local public stations in 35 states, are targeted at spurring community-based information networks.

Typical is the proposal of Omaha Press-Pilot, which will provide various services including Internet access to more than 300,000 citizens in Greater Omaha. Among the diverse partners in the Press-Pilot project are schools, arts councils, medical centers and museums.

— Ellis Boeker

Community computing

By April, the Corporation for Public Broadcasting, in partnership with US West, awarded \$1.2 million to 12 community computing networking projects. The awards, chosen from 50 proposals submitted by local public stations in 35 states, are targeted at spurring community-based information networks.

Typical is the proposal of Omaha Press-Pilot, which will provide various services including Internet access to more than 300,000 citizens in Greater Omaha. Among the diverse partners in the Press-Pilot project are schools, arts councils, medical centers and museums.

— Ellis Boeker

Enterprise Networking

SNA traffic gets priority in router upgrade

By Surendri Mohan

Hypercom Network Systems is offering an upgrade to its integrated Enterprise Network router designed to address the priority allocation problem that often plagues branch networks when most traditional SNA and LAN traffic are combined.

Called Dynamic Queue Manager (DQM), the software combines three priority allocation methods—scheduled priority, dynamic priority and bandwidth allocation—to ensure that time-sensitive SNA traffic goes ahead of other traffic, such as TCP/IP or other LAN-based traffic.

"DQM ensures that LAN and SNA traffic can be transported over the [wide-area network] reliably and fast," said Paul Wallner, vice president of engineering at Hypercom in Phoenix.

Likely old and water

Unlike LAN traffic, which goes across the network in bursts and eases off when things get slow, SNA sessions cannot break delays, said Lynn Nye, president of NetBiosys, a consulting firm in Portland. One SNA session is lost if acknowledgement is delayed, so they need to be prioritized.

"Mix the two [LAN and SNA].

and LAN traffic can choke SNA," Nye said. "This is the biggest issue in the industry for branch networking."

Nail Anderson, chief operating officer of The Tully Group, an independent testing and consulting organization in Manasquan, N.J., agreed that adding some of the most voluminous traffic, such as that generated by server software, is the least time-critical. On the other hand, LAN traffic, which is typically dependent on quick response times, if you want prioritized traffic, you can make sure the S270 frame goes first and the IP or IPX traffic goes later," he said. □

Priority maintained

The DQM software works with the Hybrid Transport Manager, a multi-protocol transport method used by Hypercom's routers that supports deterministic and non-deterministic routing. Additionally, DQM makes priority information available to all the routers on the network so traffic keeps its priority as it goes along the network. The upgrade will be available free of charge.

Anura Garuge, a system consultant in New Ipswich, N.H., said this announcement puts Hypercom "in the same league with Cisco and Proteon."

At: I guess that makes it a great buy, huh? (Laughs). Because of the volume our stock trades, you get a lot of short-term activity, including people selling short. There are a lot of people trying to make money off our stock no matter which way it goes.

Q: How closely do you watch the stock price? At: I don't watch the stock closely myself, but of course it is important to our employees, many of whom have a lot of stock option compensation. I look at the fundamental things. To be successful in the stock market, you have to have consistency. If you're unpredictable on a quarterly basis you don't get much valuation. That's why [Cablenet] has a better value than [SynOptics], because they're more predictable.

Q: Why is Wall Street being so hard on you? At: We've made a huge drive to shorten lead times and that has provided more service to customers, but it has also caused some short-term unpredictability.

Q: How important is your relationship with Novell to your future?

Schatt

CONTINUED FROM PAGE 59

MHz and has a built-in CD-ROM drive. I'd love to have one of these in my house to run the new checkbook program. The public is going to love this."

One of the major problems for managers today is that the networking industry has evolved to the point that it's not clear how to reach the millions of customers who need equipment to use as a channel of value-added services. What this means is that hardware and software manufacturers don't deal directly with end users.

In the past few months, I have had several conversations with networking companies that have convinced me that customers were using their products in certain ways but had only their own feel good feelings to back up these conclusions. One software company insisted that its installed base needed certain features found only in a new version of its product, the migration to which would require considerable expense and effort.

Based on data collected by my company is more than 250,000 interviews with end users, I tried to reason with them that there was no hard evidence that these customers were even tempted to move to the new program. I pointed in these customers' purchase plans for the next year, which showed an trend toward product migration.

My audience still was not convinced. They were so deeply entrenched in their company's culture that they were completely isolated from their customers. Almost like a religious cult, this very tight group of selling professionals looked only among themselves for validation of their convictions. They even ignored their own sales figures.

Some companies, automobile manufacturers and even beer companies spend millions of dollars each year conducting primary research. They interview potential customers in malls, over the phone and by mail to find out what these people want in the way of new products. I'm convinced that the reason the networking industry lacks the market research sophistication of other industries is that people attracted to this industry love the technology and fail to spend enough time looking at the business needs of their potential customers.

Not too long ago my company examined data

from several thousand individual services with Fortune 1,000 companies and concluded that less than 10% of the PCs at sites could run Windows NT, but there isn't a product developer at any major networking company that still uses an Intel 286- or 386-based PC, yet there are millions of these units still performing useful functions at Fortune 1,000 companies. Intel has been predicting a world filled with Pentium-based PCs, but has it asked potential customers if they need the power and performance of this chip or if they are willing to pay the price?

The British poet W. H. Auden wrote a piece several years ago, "The Unknown Citizen," in which he describes a government that blindly plans the future of its citizens based on its own statistics and doesn't consider the feelings or wishes of the citizens. The poem concludes with this comment about the unknown citizen:

"Was he free? Was he happy? The question is absurd."

Had anything been wrong, we should certainly have heard."

In networking, customers need to make themselves heard.

Schatt is a LAN service director at Computer Intelligence/InfoCorp in La Jolla, Calif.

Morgridge

CONTINUED FROM PAGE 46

line. We will emphasize switching products over the broad scale, using routing expertise to make those products more scalable. There's also a natural integration of access routing and hubbing going on, and we'll have products there. But over time, the definition of a hub will change, so we'll partner with others to ensure the availability of [hub] products to our customers.

Q: What did you learn from your experience of confronting IBM directly on Advanced Peer-to-Peer Networking?

At: We were a little late in declaring victory when they backed down on most of the issues. We should have realized we wouldn't win 100%, but we did get input into their development process, and that 80% we did get was very worthwhile.

Q: Your stock is trading near the 52-week low. Why are investors hitting you so hard?

At: I guess that makes it a great buy, huh? (Laughs). Because of the volume our stock trades, you get a lot of short-term activity, including people selling short. There are a lot of people trying to make money off our stock no matter which way it goes.

Q: How closely do you watch the stock price? At: I don't watch the stock closely myself, but of course it is important to our employees, many of whom have a lot of stock option compensation. I look at the fundamental things.

To be successful in the stock market, you have to have consistency. If you're unpredictable on a quarterly basis you don't get much valuation. That's why [Cablenet] has a better value than [SynOptics], because they're more predictable.

Q: Why is Wall Street being so hard on you? At: We've made a huge drive to shorten lead times and that has provided more service to customers, but it has also caused some short-term unpredictability.

Q: How important is your relationship with Novell to your future?

At: They are part of our future, as is Microsoft, Banyan, Apple, perhaps even Compaq. A good strategic relationship is a continuous stream of successful tactical activities. Saying we'll cooperate on engineering and development for five years isn't much use. I'd rather have three successful tactical projects than one five-year cooperative agreement.

Q: You just turned 61, and you have said that you don't expect to be at Cisco when you're 67. How much longer do you intend to stay?

At: It's not my intent to stay that long. Ten years is too long to be with one company these days. One of the great things about Silicon Valley is that we're not a single culture. We're a collection of cultures. Chaos and change is very important to the lifeblood of the company.

Q: Will you have a clearer line of succession than Ray Noorda had at Novell?

At: We've recently made some moves to broaden [Senior Vice President John] Chambers' responsibility. That should tell you something.

WorldTalk Corp. has introduced the WorldTalk 400 Access Unit for Lotus Notes, an integrated messaging gateway.

According to the Los Gatos, Calif., company, the WorldTalk 400 Access Unit works in conjunction with the WorldTalk 400 messaging integration system. Notes users can send and receive messages, documents and applications to and from servers of other electronic-mail packages.

The product provides connectivity to these other systems via the company's WorldTalk 400 server, which runs on a Hewlett-Packard Co. HP 9000 or Intel Corp. platform. Both senders and receivers of E-mail can work in their native formats and addressing schemes without worrying about whether the message is going to or coming from a foreign system.

The WorldTalk Access Unit for Lotus Notes costs \$2,500.

► **WorldTalk**
(408) 388-4000

Can you get to the next generation of smart networking without scrapping the old one?

Right now, lots of vendors are selling next-generation smart switching hubs. But they all have one minor problem: What they sold you before won't work with their new technology.

With Chipcom, it's a different story. Because to us, all this new technology is technology we pioneered years ago. We've been building switching hubs as long as we've been building hubs. So if your network has been built around Chipcom products, you've already bought a big chunk of its future. And whatever technology that future will require.



ONline™ NCS

For example, if you're running a network on our ONline™ System Concentrators, and you need to upgrade all or part of it to our next-generation ONcore™ Switching System, there's no problem. Every ONline module is completely upward-compatible. So not only do you save substantially by not scrapping your existing modules, you can upgrade where and as needed.

And unlike hub makers who grew up struggling with departmental LANs, vast enterprise-wide networks don't faze us. We started out building connectivity devices for huge networks, so we built scalability and

With Chipcom®, you can.

comprehensive network management into our architecture right from the start.

Call us at 1-800-228-9930 for complete information on the ONcore Switching System.

Or call us at the same number to inquire about Chipcom's worldwide seminar series on enterprise-wide networking. It's being held in more than 50 locations, so call to learn where and when we'll be in your region.

SEE US AT INTEROP, BOOTH #5218



ONline™

ONline™

ONline™

©1994 Chipcom Corporation, Southborough Office Park, 117 Temple Street, Southborough, MA 01772
Chipcom U.S. Tel: 508-866-9999 Chipcom Europe Tel: +44 891 794716 Chipcom Asia Tel: +81 3 325-6212



The expanded Symmetrix series ICDA*

When it comes to mainframe data storage, a lot is being asked of you these days. No matter what size your data center is, you need the perfect balance of performance and capacity. And you need to address these issues within a fixed budget. That's why you should take a closer look at EMC's new, expanded Symmetrix series. The industry's performance leader, the Symmetrix series has now been expanded to include new models with balanced

and affordability. Including a disk storage solution that can store one terabyte of data in 17 square feet of floor space. Of course, with each Symmetrix model you get the availability and reliability for which EMC is famous. The Symmetrix series is based upon our field-proven MOSAIC:2000 architecture and meets all of your on-line storage needs from a single architecture. In short, no matter what size budget you're working with, EMC's Symmetrix series will work for you. If you'd like more information, call 1-800-424-EMC2, extension 1M34C today.



YOU'RE BEING ASKED TO BALANCE PERFORMANCE, CAPACITY, AND AFFORDABILITY. OUR EXPANDED SYMMETRIX SERIES WILL SHOW YOU HOW IT'S DONE.

EMC²

THE STORAGE ARCHITECTS

SYMMETRIX SERIES ICDA MAINFRAME STORAGE

© 1994, EMC. Symmetrix and the EMC logo are trademarks and ICDA is a registered trademark of EMC Corporation.

Large Systems

DEC 2100 KEY TO
ALPHA AXP STRATEGY, \$6
NEW PRODUCTS, 66

Analysts say big-iron sales will level off

By Craig Stedman

1993: The mainframe is dead. 1994: The mainframe is alive and kicking. 1995: A little of both?

There is probably no need to dust off any dinosaur jokes, but several mainframe analysts are forecasting that the revival of big-iron sales, which began late last year, will moderate by year's end as customers who delayed purchases in previous years fill their capacity needs.

"It's going to quiet down" in 1995, said Susan Middleton, a senior analyst at international Data Corp. in Framingham, Mass. "There's been a healthy stabilization of the market, but we're still seeing so many people offload the applications that can be off-loaded to other platforms."

No comparison

No one is suggesting that users will again hear how shops plan to uproot their mainframes and move every thing to client/server systems. The technical shortcomings and high integration costs that slowed the migration to smaller platforms are not likely to disappear, users said.

"There hasn't been anything built yet that equals the mainframe's server capabilities," said Bill Finefield, an administrator at the Defense Information Systems Agency's information processing center in Richmond,

Va. The processing center upgraded its three mainframes late last year and early this year, and Finefield said he and his staff are "keeping our eyes out to upgrade these again if we can save money and increase capacity as well."

Decreasing revenue

Mainframe purchases have indeed been relatively brisk this year, although revenue continues to drop because of price reductions. Jerome York, chief financial officer at IBM, told analysts in July that its shipments of mainframe MIPS increased 23% in the second quarter, compared with a year ago. Revenue fell by about 10%, but that figure was much smaller than IBM executives expected at the start of the year, York added.

With IBM unable to meet demand for ES/9000 systems because of earlier manufacturing cutbacks, the com-

pany is sold out of mainframes "well into the fourth quarter," York said. Andahl Corp. also cited better-than-expected mainframe revenue as a key factor in its return to profitability this year while noting that second-quarter MIPS shipments increased between 10% and 20%.

But ever Joseph Zemka, Andahl's president and chief executive officer, voiced doubts about whether market conditions will remain flush. "We don't know how long the bubble is going to last," Zemka said in a recent teleconference. "The question we're trying to answer is how much of this is pent-up demand and how much is a surge that can be sustained."

Analysts gave much of the credit to pent-up demand, saying capacity needs are forcing the hands of customers who had been exploring

Mainframes, page 66

More from less

While the number of mainframe data centers has shrunk about 5% in the past few years . . .



mainframe capacity continues to increase



Source: Computer Intelligence/infocorp, Santa Clara, Calif.

Vendors rely on honor system to enforce per-user prices

By Kim S. Nash

Per-user pricing for databases from Informix Software, Inc. and Oracle Corp. is largely unenforceable, the vendors acknowledged recently, in fact, both vendors rely on users' honesty to comply with database license contracts that stipulate a certain number of users or specifically named users may access a given database.

Certainly, other software and operating system providers lack a means to easily and routinely patrol per-user contract-abusers, but the situation is coming to the fore as database users—as application—and end users—are increasingly split among processors.

No standards

Variations of usage-based pricing methods have been in the offing for a number of years, said Herb Edelstein, an analyst at Frost & Sullivan Associates in Potomac, Md. But the schemes have been stalled because of the lack of a standard usage measurement.

That problem still exists, but users have recently forced the hands of database makers in demanding the simplicity inherent in per-user pricing, Edelstein said.

Indeed, Informix shifted to per-user pricing early this year for its Informix OnLine database, and Oracle started per-user fees with the shipment of Oracle

7 Release 7.1 last month [CW, June 27]. But neither database contains mechanisms for enforcing per-user contracts.

Informix plans to leave the issue of tenability in the hands of operating system vendors, said Tim Shetler, Informix's vice president of product marketing. Some firms, such as Hewlett-Packard Co. and Silicon Graphics, Inc. (SGI), have begun embedding metering software into their Unix systems, but there is no widespread agreement about what metering technology to use, he said.

Further, the user monitor built into HP's HPUX and SGI's Irix may cause performance degradation in some applications, Shetler said.

The monitor, IPORUS, from Gradient Technologies, Inc. in Marlboro, Mass., was not designed to track named users, which is one of the most popular ways to use a database.

Gradient's product was originally intended to monitor a small number of concurrent users who check out a limited number of executable copies of a program, such as word processing applications.

"Checking in and out databases over a network . . . would hit performance," Shetler said.

For Gradient, the situation is not a problem, a company spokesman said. This is evidenced by the fact that a "major" database vendor recently signed an as-yet-unannounced deal to license the product, the spokesman said.

He declined to identify the database provider, but it is rumored to be Oracle. Mike Hague, head of pricing at Gradient, declined to comment.

Theory vs. practice
Regulating users can be a political hot potato. For example, a licensee could be asked to turn back to any one trying to tap into it after 50 users with a court message such as, "Your use of this database would violate licensing contracts. Don't try to steal software."

"What if the president of this user company happens to be that 51st user that day?" asks Jon Verno, a database administrator at Electronic Transaction Corp. in Bothell, Wash. "Do you really want that to happen?"

"Per-user might be easier to understand, but it's still unclear how efficient it will be in practice," said Michael Higgins, technical support manager and database administrator at Byer Calfornia, a clothing maker in San Francisco.

Beyer has converted half of its dozen or so Oracle databases and tools licenses to per-user pricing so far, but that pricing scheme is not a given, Higgins said.

"I'm going to hold on . . . until it becomes clear what the strategy is," he said. "I need to know more before I go overboard."

Burlington Coat Factory Warehouse Corp. in Burlington, N.H., for example, runs Oracle databases and tools on six multi-processing machines from Sequoia Computer Systems Inc. "All these processors can theoretically support multiple users," said Mark Puryear, a database architect. "It would be an administrative nightmare to track all that."

The company opted for a site license several years ago and has no plans to change, Puryear said.

Per-user pricing—that is, pricing not bound to CPU type or brand name—will force some users to choose host hardware based on different factors, said Dave Ruiz, director of product marketing at Viewstar Corp., a database reseller in Emeryville, Calif.

Previously, a \$9,000 price difference for Informix-OnLine on one Unix system vs. another system, for example, could cause a company to purchase the less expensive platform, Ruiz noted. But per-user "removes the database vendor a little further from the position of making even implicit hardware recommendations," he said.

The key to
making
object-oriented
technology
work for your
business
is one simple
equation:
OOT = IBM.

**Object-oriented technology
adds up for your business.**

Faster development. Increased programmer productivity. Higher-quality, lower-maintenance applications. Code reuse. The ability to respond quickly to changing business conditions.

Object-oriented technology is the answer you need to make your business more competitive. With 45 major-league development projects behind us, IBM delivers the object solution and

its extensive C++ class libraries, its visual PM debugger, and its full function browser, you have the language and the tools you need to produce serious OO applications today, with code that can easily be reused tomorrow.

**VisualAge. "A powerful
new vision of programming."**

VisualAge is IBM's hot new visual programming tool that lets you produce scalable, object-oriented client/server applications with

**SOM. The common thread
for object environments.**

 IBM's System Object Model (SOM) and Distributed System Object Model (DSOM) are language-neutral mechanisms for developing class libraries. With SOM, you can develop objects in one language and easily use them in another. And SOM supports CORBA, the Common Object Request Broker Architecture of the Object Management Group (OMG).



C Set++ is the most complete C++ object-oriented development tool you can buy for OS/2.

the services you need to take full advantage of the new technology. From infrastructure to tools to development platforms for commercial and technical developers, nobody is doing more to balance the OOT equation than IBM.

**C Set++.
Mission-critical code starts here.**

IBM's C Set++ is the development package behind many of today's popular software programs, like Lotus 1-2-3® for OS/2®. With its exceptionally reliable 32-bit C/C++ compiler,

amazing speed. Using intuitive graphical interface tools and a completely integrated Smalltalk base, you and your team can link and share objects by connecting icons and build new industrial-strength applications out of code that has already been written.

VisualAge makes your programming faster and more responsive, because it lets you recycle code instead of rewriting it. And it gives you easy access to the entire DB2® family of relational database management systems.



VisualAge combines the ease of visual programming with the power of object technology.

Get started today.

This is only the beginning. To receive our white paper on new directions in object-oriented technology, or to order IBM OOT products and services, call 1 800 IBM-3333, ext. STAR 704.

And we'll show you how easy it is to write yourself into the OOT equation.

SOFTWARE FOR OBJECT-ORIENTED TECHNOLOGY



Large Systems

DEC 2100 key to Digital Alpha AXP strategy

By Mary Brandel

When Digital Equipment Corp. announced its \$1.7 billion quarterly loss at the end of July, it also had some good news to report: Sales of its Alpha AXP systems finally outpaced its VAX VMS systems by about \$15 million, according to Salomon Brothers, Inc. in New York.

Alpha-based workstations represented three-quarters of the \$400 million spent on Alpha systems, said John Jones, an analyst at Salomon.

However, one sector stands out from the crowd and is generally seen as responsible for the Alpha increase in Alpha server sales: the DEC 2100, one- to four-processor DEC 2100-based server, also known as Seibel, which was released in April.

In price-performance and in its price range, the 2100 is the king of symmetrical multiprocessing (SMP) RISC-based servers. Neither Hewlett-Packard Co. nor Sun Microsystems, Inc. has released a comparable box, although IBM is planning a fall release of its "Sable server," said Terry Shannon, an analyst at Illuminata in Holbrook, N.H.

"We're using VAX 4000s, and for literally one-third the price, you can buy an Alpha machine with even better performance statistics," said David Suco, IS manager for the rodless products division at Alcan Aluminum Corp. in Cleveland.

"We're getting four 180-MHz-plus processors and a half-gigabyte of memory at a price point of \$1600,000—that's hard to beat in the market today," said Peter Evans, senior research associate at the University of Miami.

Evans also values the 2100's scalability, particularly with an expected power boost to 273 MHz in the fall. In addition, the amount of disk storage is "tremendous," he said, and the wide bandwidth bodes well for the university's planned internal Asynchronous Transfer Mode internal network.

"We'd like to see a price drop in Digital's memory; hopefully, we'll be expanding [the systems] at more points," Evans said.

The 2100's choice of three operating systems—Digital's OpenVMS, the Open Software Foundation's OSF/1 and Microsoft Corp.'s Windows NT—appealed to Lawrence White, technical director of criminal Justice information systems at the New Mexico Department of Public Safety. Although the department chose OSF/1 for now, "we didn't want to lock-in," he said.

Better pricing

Because the 2100 incorporates industry-standard components, such as Peripheral Component Interconnect and SCSI, its design is low-cost and modular.

For instance, the 2100 sells at half the price of the DEC 4000, an earlier Alpha server, but costs Digital one-third as much to produce, Shannon said.

In fact, 2100-type technology is expected to appear in future Alpha boxes. "Before the end of the year, it will have a ripple effect throughout the Alpha server line," Shannon said.

According to Renee Martinez, group manager for Alpha systems product marketing, the plan is to take the 2100's technology and create "a complete server product line from small workgroup to high enterprise," with the 2100 positioned as a departmental server.

The DEC 7000, an enterprise-level AL-

Alpha AXP server will be more modular and will include more standards-based components, Martinez said.

"You can expect more synergy between the Intel PC group and the Alpha server group," he said. "Where we can share components and technology or have a more synergistic sales strategy,

those are areas where you'll see dramatic progress in the next six to 12 months."

Chief Executive Officer Robert Palmer said in a recent telephone conference that Digital also plans to introduce a four-processor Intel Celeron server. In fact, some analysts said Digital could incorporate Intel processors in a

2100-like box. "PCI and EISA are tailor-made for Intel compatibility, so what would be the holdup?" asked Jonathan Euine, an analyst at Illuminata.

Digital would not give specifics on 2100 shipments, but estimates say 3,000 to 3,500 have shipped since April—three times what was forecast, said Chris Christensen, an analyst at International Data Corp. in Framingham, Mass.

Since its April release, unexpected demand has pushed lead times for the server to the 45- to 60-day range from the original two to three weeks, he said.

"That's pretty damn good for something that's only been out for a couple of months," Shannon said.

Second generation Alpha

The 2100's introduction will supply the second generation of Digital's Alpha line.

Entry-level system	Floor space (sq ft)	Power consumption (kilowatts)	Maintenance (cost per month)	Price/ performance*
DEC 2100	8.3	850	\$102	\$4,495
VAX 4600	58.6	1,600	\$482	\$6,200
VME alpha	8.3	340	English	\$5,725
TPA				

plus server, will be enhanced with 2100-like technology this fall, Martinez said, with more processors, "comparable I/O and exciting price/performance and scaling." The result, Shannon said, will be a 12-way SMP system that eliminates the DEC 6000 from the product line.

Customers can also expect a one- and two-processor workgroup server and more 2100 versions as well. Analysts had expected a desktop machine based on Sable to sell at less than \$4,000, but such a system has not emerged.

in the end, Shannon said, the Alpha AXP line will be slimmed down to "something like four servers."

A year from now, a third generation of

Mainframes

CONTINUED FROM PAGE 63

client/server options or waiting for better economic times. That wave of buying is expected to start tapering off by year's end.

"It's a transient thing," said Charlie Burn, research director for large computer strategies at Gartner Group, Inc. in Stamford, Conn. "At IBM's previous manufacturing level, it probably could have supplied all the pent-up demand for the whole year by now. So [its backlog] is being extended almost arbitrarily."

Help on pricing

Ironically, the tight supply has worked to the advantage of IBM and its mainframe cohorts on pricing. Burn and others noted, the cost of mainframes has declined at a slower rate this year than it did last year [CWA 20, 20], as users could benefit if demand eases next year.

However, Nancy Stewart, a senior industry analyst at Datasquest, Inc. in San Jose, Calif., said some of the expected drop-off in ES/9000 demand will reflect shifts to IBM's new CMOS-based parallel System/390 technology rather than diminished demand.

"I don't see CMOS as a savior, but it will help

What size is IT?

It can be difficult to get a handle on the size of the mainframe market because the companies measuring it are not necessarily operating on the same wavelength.

Datquest predicts mainframe and supercomputer shipments will total 8,600 units this year, worldwide revenue of \$6.8 billion.

International Data Corp. expects 2,659 units to be shipped, amounting to \$2.2 billion in revenue. IDC said its revenue figure includes storage devices.

bulk up the revenue streams of the mainframe vendors," she said.

Tom Loane, vice president of computers and communications services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla., agreed that the CMOS-based systems will push traditional mainframes "out of the market in the next 18 months or so." Whether there is a drop-off in mainframe buying during that time "depends more on the economy than anything else," Loane said.

Back and forth

Mainframe sales "will probably go to and fro for a long period of time as the open systems environment is either successful or not successful" in presenting an alternate choice, said Stan Johnson, IS director at Worldport L.A., the port authority in Los Angeles.

But Johnson is one user who hopes he has bought his last mainframe. Worldport L.A. could triple the capacity of its Amdahl 5960M mainframe through upgrades but is looking instead to move its financial applications to local server, starting with a cash expenditure tracking system scheduled to go on-line in March, he said.

Similar to a growing number of organizations [CW, July 25], the port authority plans to see if its mainframe can be used for backing up LAN data, Johnson said. "Otherwise, we might try to give it away to a Third World country somewhere," he joked.

Briefs

CA gains interest in Newtrend

Computer Associates International, Inc. announced plans to exercise its right of first refusal and acquire the remaining interest in Newtrend, a 5-year-old banking software joint venture between CA and The Newtrend Group. In June, The Newtrend Group notified CA that it had selected an offer from a third party for the joint venture. CA consequently notified The Newtrend Group that it will not join in the proposal to sell the company. Last year, CA filed a lawsuit in a Delaware Chancery court to dissolve the partnership and have The Newtrend Group return to CA the InfoPoint software it contributed to the joint venture.

IBM names Richter VP

IBM named R. Gene Richter vice president of worldwide procurement, with responsibility for all of its purchasing activities. Richter was previously executive director of procurement at Hewlett-Packard Co.

**WHEN YOU THINK OF
MASSIVELY PARALLEL PROCESSING,
WHAT COMPANY COMES TO MIND?**



*(Okay. Time's up.
You can turn the page now.)*

Large Systems

Tecsys, Inc. has announced the Elite Series 6.0 software for distribution and manufacturing organizations.

According to the St. Laurent, Quebec, firm, the Elite Series 6.0 users handle high-order desk traffic interactively; treat order lines individually and process each line as a separate order.

The product consists of 20 modules including Order Processing, Inventory Management, Forecasting/Requisitions, Purchasing, Sales Analysis and Financials. Each handles multiple locations, languages and currencies.

Elite Series 6.0 also lets any number of users retrieve information, color images, black-and-white schematics and database voice tracks.

Prices start at \$25,000, depending on the number of users.

► *Techno*

(514) 333-0000

Integrated Software Design, Inc. has announced On-Tap/VMS for PostScript, bar-code and labeling software.

According to the Mansfield, Mass., company, On-Tap/VMS for PostScript integrates bar codes into any PostScript application running on Digital Equipment Corp.'s VMS operating system.

The user marks the data to be barcode with a set of trigger characters, and the product converts the data into any of the 15 sets of symbology available.

On-Tap/VMS for PostScript also works with any PostScript-compatible printer and operates as a PostScript program at the printer level.

Prices range from \$10 to \$34 per printer.

► *Integrated Software Design*
(508) 339-1628

Memorex Telex Corp. has introduced the 148X line of fluid-function 3270 displays.

According to the Irving, Texas, firm, the displays reduce energy consumption up to 98% during power down and exceed the U.S. Environmental Protection Agency guidelines for energy-saving computer equipment.

The 148X line offers vertical or horizontal dual-screen capability, allowing users to work directly between two active sessions. Users can migrate to a PC by replacing the logic unit with a CPU.

Prices range from \$865 to \$2,530.

► *Memorex Telex*

(214) 444-3500

Brio Technology, Inc. has announced DataPrism for IBM AS/400, an ad hoc query tool.

According to the Mountain View, Calif.,

firm, DataPrism for IBM AS/400 lets users use the capabilities of DB2/400 databases without having to learn programming or SQL commands.

The product is available for Windows and Macintosh and includes complete cross-platform compatibility with a single interface and file format.

Export users can integrate data into executive information systems, edit SQL statements, distribute predefined queries across the network and use a script language for control of all DataPrism functions from external applications.

DataPrism for IBM AS/400 costs \$395.

► *Brio Technology*
(415) 961-4110

NetSoft has announced NS/Queues and NS/Virtual Print, Windows-based client/server products for IBM's AS/400.

According to the Laguna Hills, Calif., company, the products run over NetSoft's NS/Router, a native Windows router for IBM AS/400 connectivity.

NS/Queues lets users send and receive messages to and from IBM AS/400 data queues in a native Windows environment.

NS/Virtual Print lets users access high-capacity printers attached to the IBM AS/400 server as though they were locally attached to the PC, without using terminate and stay resident programs.

Both products come bundled in NetSoft's NS/Midrange Bundle for \$395.

► *NetSoft*
(714) 765-4913

Accent Solutions, Inc. has introduced PKZIP MVS, a mainframe data compression utility.

According to the Dayton, Ohio, company, PKZIP MVS compresses data from 50% to 90%, depending on file type.

The product can convert record-oriented data into stream-oriented data and allows users to choose whether to emphasize the speed or degree of compression.

Prices range from \$6,950 to \$14,950.

► *Accent Solutions*

(513) 886-2037

Product short

Design Data Systems Corp. has introduced Design Time Financial Applications with multicurrency capabilities. The product lets users conduct a transaction in any foreign currency on which exchange rates are maintained for general ledger, accounts payable, accounts receivable, project accounting and purchase order modules. A reporting currency feature calculates in one currency and reports in another. Cost: \$7,500 to \$25,000 per module. Design Data Systems, Largo, Fla. (313) 538-1077.

XSoft

A DIVISION OF XEROX

Industries using XSoft
workflow solutions include:

- AEROSPACE
- ADVERTISING
- AUTOMOTIVE
- BANKING
- EDUCATION
- ELECTRONICS
- ENGINEERING
- FILM PRODUCTION
- GAS AND OIL
- GOVERNMENT
- HEALTH CARE
- LEGAL
- MANUFACTURING
- PHARMACEUTICAL
- RESEARCH
- TELECOMMUNICATIONS
- UTILITIES

STRUCTURED DOCUMENTS FOR THE NEXT

As companies create ever larger volumes of compound documents, incorporating information from multiple sources, the need for a consistent composition standard has become imperative.

It is a standard that is gaining acceptance. Called Standard Generalized Markup Language (SGML), this composition language makes documents easier to create by providing a single structure that accommodates disparate representations.

At XSoft, our InContext solutions, InContext and InContext for Automated Publishing Systems (APS), are powerful document publishing tools.

MS/W SGML Server is a SGML-compliant system that allows documents to be separated into data, structure, and logical information. Names and namespaces can be used so they may be called during searches, both in-text in any document, paper or electronic. Update information, and InContext updates all documents containing SGML information. Our CAPS document composition product provides network access to distributed composition and presentation servers for SGML.

With XSoft SGML Server, document software and source documents can be easily produced and updated by anyone with publishing needs. It is anyone involved in the management of documents.

For more information on InContext and CAPS, or if you can benefit from consultation on the many advantages they can bring to both your business processes, call 1-800-428-2995, ext 338.

"SGML does for documents what object orientation does for code — It allows data to be created once and then reused in different forms and applications."

Esther Dyson,
Release 1.0

XEROX, XSoft, and CAPS® are trademarks of XEROX CORPORATION.

HERE'S WHY YOU SHOULD HAVE SAID ENCORE.

At a time when other computer manufacturers are all rushing to market some version of massively parallel processing, perhaps we should remind you that Encore is a company built around the concept.

For over 10 years, we've been developing MPP specifically for commercial use. For over 30 years, we've developed high-performance real-time connectivity.

No one has developed a massively scalable parallel architecture more powerful or commercially capable than the Infinity 90/ES.TM

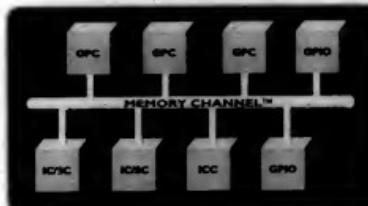
No other parallel architecture handles more on-line and batch operations. No other mainframe provides such a variety of connectivity. No other system has so much power to easily re-host or re-engineer your legacy system.

Incredible performance is our patented **MEMORY CHANNELTM** — a high-performance bus with a bandwidth of 53

restrictive, exotic applications and programming techniques, the Infinity 90TM presents a single systems view to the programmer based on standard UNIX[®] — a major savings in time and training costs.

The Infinity 90 Family offers a broad range of systems, from entry level to machines scaled for multi-mainframe consolidation and deployment.

And now you can begin the transition of your data center to the advantages of open systems with the Infinity 90/SATM — a highly affordable model configured to run pilot programs with advanced MPP technology, not an SMP compromise.



Our unique "building block" architecture can deliver over 200,000 MIPS and over 200 terabytes DASD.

to 144 MB per second, while other channels max out at only 4.5 MB per second. In fact, the **MEMORY CHANNEL** can be scaled to provide as much as 4.6 GB of direct I/O bandwidth.

With such high capacity bandwidth, combined with our modular intelligent subsystems approach, we have been able to design servers of almost infinite scalability. In processor power, I/O capacity and in overall data throughput, you can achieve virtually linear increases in performance at unbelievable savings when compared to conventional mainframes.

Compared to other MPP systems, the Infinity 90TM Series not only delivers far more I/O power, but a truly open systems approach. Instead of



Graphical systems management software monitors and controls soundness and performance, security, and storage.

For more information, ask your systems integrator or call — 800-933-6267. If you're going to think MPP, think of the company that lives and breathes MPP. The one that does it right.

Because for mission-critical applications that require exceptional I/O bandwidth, MPP is no longer the technology of the future. The Encore Infinity 90 Series makes the future today.

The Infinity 90/ES. A breakthrough for data centers running RDBMS, OLTP or CICS.TM

No other company has more experience designing, installing and operating MPP systems than Encore. The secret behind the Infinity's

ENCORE
COMPUTER CORPORATION

THE FUTURE BELONGS TO A HIGHER INTELLIGENCE.

"top scores in six areas"

Computerworld Buyers' Satisfaction Scorecard



Of our 1900 clients worldwide, an impressive number are now up and running with Lawson client/server open enterprise solutions. On SYBASE® ORACLE® and INFORMIX®.

According to Computerworld's Guide to Client/Server Financial Software, an even more impressive number give us top scores in all six categories: Responsiveness of Service, Ease of Use, Overall Reliability, Reporting Capabilities, Interfacing with Other Applications and Quality of Support. In fact, Lawson was highest in overall satisfaction of all the companies surveyed.

Call us at 1-800-477-1357 extension 844, and find out why.

LAWSON

Software

Application Development

ZINC UNITES ENVIRONMENTS,
LANGUAGES WITH ONE CODE, 72
NEW PRODUCTS, 74

Customers fret despite KnowledgeWare merger

Sterling pledges continued support for ADW

By Melinda-Carol Ballou

Corporate developers who use KnowledgeWare, Inc.'s tools are anxious about the company's acquisition by Sterling Software, Inc. The two companies announced a merger agreement earlier this month.

Those customers are concerned about the status of ongoing development and support for products such as Application Development Workbench (ADW). Many have made major investments in the computer-aided software engineering tools and have based their corporate development strategies on them.

Sterling will provide KnowledgeWare with much-needed financial relief, but it is not yet clear how KnowledgeWare's products will fit into Sterling's portfolio.

Officials from both companies have attempted to assure customers that support will continue for KnowledgeWare products such as ADW, but users said they are worried nonetheless. The officials said specific plans may be made by a transition team made up of management from both companies before the merger is finalized on Nov. 1.

Customers with significant commit-

ments to ADW put the best face they could on the merger:

"We want to check it out further — we have concerns about it since we don't know what Sterling's plans are," said Rick Olson, senior programmer/analyst at L. L. Bean, Inc., a Freeport, Maine-based retailer. L. L. Bean has a substantial investment in corporate models built with ADW and had considered expanding its investment, but now the company may wait.

"There hasn't been a reasonable amount of [that position so far], and I don't know whether this announcement will trigger that not to," Olson said.

Olson and other customers said they felt blindsided by the merger because KnowledgeWare did not inform them directly. Some read about it in the press; others were informed by reporters looking for interviews.

Also worried about Sterling's plans for ADW but withholding judgment for the moment is Dan Clark, director of develop-

ment at Blue Cross/Blue Shield of Virginia in Richmond.

"We're taking a 'wait-and-see' approach," Clark said, adding that he would like to see a clear commitment of resources to ADW development and a clearer direction from the company about how ADW will be integrated with other technologies, such as client/server products and R&D, Inc.'s Roseville repository.

Clark's organization has major investments in ADW. It has 14 applications under construction and two major systems — for claims processing and back-end output — that were built using ADW, he said.

"As long as the company is financially viable [under the merger] and they keep supporting ADW, we'll stick with it," he said.

Other ADW sites expressed hope that the investment would give KnowledgeWare the financial resources to improve ADW and result in better support.

"If Sterling has the capital to invest in ADW to improve areas of weakness, it could be a very positive thing," said Dan

Jones, senior manager of information resource management at Norwest Mortgage, Inc., in Des Moines, Iowa. "But if they're buying them to need them and spin them off, that would be a problem." Sterling has acquired 23 companies with an effective, hands-off management style, according to several analysts, who nonetheless are reserving judgment.

Jumping ship

Some disgruntled KnowledgeWare customers have become a feeding ground for competitors such as Intersoft, Inc. and LIMIS, Inc., according to some industry analysts and the users themselves.

First Union National Bank in Charlotte, N.C., moved from ADW in March and is currently making a transition to Intersoft's Excalibur II tools, according to Steve Gordon, systems development consultant at the bank.

Gordon cited a cumbersome and arduous KnowledgeWare product structure, a poor support relationship and the company's financial struggles as reasons for the switch.

"We feel it was a good move for us to get out when we did," Gordon said. "We were looking for a long-term strategic partner to do business with for years to come, and we did not feel that they were going to be there for us."

Independent Btrieve reenters database market with a little help from Novell

By William Brundt

Until now, Btrieve has had a surefire marketing and channel strategy: Build a database and let parent Novell, Inc. bundle it with NetWare. That way, Novell was responsible for the product's development, sale and movement through the channel — in short, its entire existence.

Things have changed for the Btrieve business unit, now known as Btrieve Technologies, Inc. (BTI), apparently for the better. BTI was spun off from Novell in April and now finds itself an independent entity for the first time since Novell acquired the Btrieve database management system from SoftCraft in 1987. While BTI continues with the same development staff, it must now carve out a niche in a hotly contested database server market.

Most fledgling software companies should be so lucky to find themselves in BTI's "start-up" position. For one thing, despite BTI's independent status, Novell will continue to support it in a number of ways, said Dan Kusnetzky, research manager for Unix and advanced operating environments at International Data Corp., a market research firm in Framingham, Mass.

For example, Novell holds a 15% investment stake in BTI and a seat on BTI's board. Furthermore, Novell will continue to license Btrieve from BTI and bundle it with NetWare 3.x and NetWare 4.x.

"While the business changes, it still looks like it's al-

ways been," Kusnetzky said. "There is no disruption in the channel. They are still on Novell's price list, and they still are part of Novell's Technical Support Alliance."

NetWare plus

While BTI enjoys this close relationship with Novell (it is also located in Novell's Austin, Texas, office building), its flagship product's success is no longer solely tied to NetWare shipments or upgrades, Kusnetzky said.

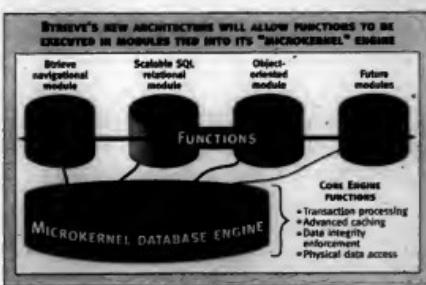
BTI is hitching a strategic plan that will enable it to exploit its 49,000-customers base and at the same time branch out beyond NetWare. The strategy is based on a new architecture that will separate the database model from the common database functions (see chart), enabling users to plug function-oriented database modules such as SQL into a back-end Btrieve database engine.

This thinking sits well with at least one major NetWare user: Btrieve cus-

tomer Chrysler Corp. Chrysler runs a factory information system on one Btrieve server and a statistical process control application on another at five Chrysler factories. Together, the LAN-based server applications serve as a factory diagnostics system, tracking 800 to 700 different machines and the role they play in the shop's assembly processes. The company plans to roll out Btrieve servers at seven or eight more factories, said Mark Wroblewski, project engineer at Chrysler.

Wroblewski said he views BTI as a direct competitor to Sybase, Inc. and Oracle Corp. in the SQL database market. He acknowledged that Btrieve's competitors have better development tools but noted that neither

Btrieve, page 72



Application Development

Zinc unites environments, languages with one code

By Stuart J. Johnston

In the application frameworks arena, little Zinc Software, Inc., aims to make a difference by providing more functionality and better cross-platform support than big-name competitors, the company's president said.

Pleasant Grove, Utah-based Zinc next

month will ship Version 4.0 of its Zinc Application Framework, a C++ tool that lets programmers use the same source code across multiple environments — and across multiple human languages.

With Zinc Application Framework, corporate developers can create one C++ program that can be compiled to run on DOS and Windows (including the

upcoming Windows version known as Chicago), OS/2 and Macintosh.

The code can also be compiled to run on multiple Unix implementations, said Robert Bishop, Zinc president and chief executive officer. Supported Unix operating systems include Sun Microsystems, Inc.'s SunOS and Solaris, Hewlett-Packard Co.'s HP/UX, IBM's AIX, The

Santa Cruz Operation's SCO Unix and the Open Software Foundation's OSF/1.

"We're going in a number of different platforms, [and the Zinc] code has gone across very well with little or no changes," said Therese Tucker, team leader for a graphical user interface product being developed by ADS Associates, Inc. The California, Calif., company develops front-end trading systems for international banking using DOS, Microsoft Corp.'s Windows NT and various versions of Unix.

Additionally, Zinc Application Framework runs under every supported environment so developers can program on the platform they feel most comfortable with, Bishop said.

Key structure

The base package, which costs \$499, consists of the Zinc Engine, to which the developer adds various "keys" that enable the resulting code to work with a particular operating system. Keys for DOS, Windows, OS/2 and Macintosh cost \$299 each. Keys for each Unix implementation cost \$1,499.

Version 4.0 adds a visual design tool that lets developers visually build an application's user interface from inside a completely integrated set of visual editors. It also adds the ability to "internationalize" code so the same code can be used with 12 languages, including Spanish, French, German, Italian, Japanese and Korean. Unicode support is also available for \$4,999.

Btrieve

CONTINUED FROM PAGE 71

compares to Btrieve in raw performance.

Wroblewski added that as NetWare users, Chrysler developers have had five years to familiarize themselves with Btrieve, and as a result, Chrysler has developed a large number of mini-applications on it that make up the factory diagnostics system. For this reason, Chrysler is encouraged by Btrieve's effort as an independent entity to develop modules that can plug into its microkernel back-end engine, he said.

"We may move to RISC, Motorola or a PowerPC for more power," Wroblewski said. "It's nice that I don't have to do a thing to the client if I swap in a more powerful back-end server. I definitely don't want to recode these applications."

Ultimately, BTI intends to roll out versions of Btrieve that run on Microsoft Corp.'s Windows NT, Unix and perhaps even OS/2, BTI officials said. BTI is preparing to deliver this month a 32-bit efficient version of Btrieve that will run on Windows. The company also plans to deliver a DOS client and NetWare Loadable Module for NetWare environments this fall.

Btrieve Scalable SQL for DOS and Scalable SQL Windows are priced at \$1,295 each.

Get in the fast lane to workgroup document management.

You want a powerful yet easy way to manage your data, *and you want it fast*. Take advantage of our workgroup document management solution to speed you to productivity with:

Fast retrieval. Organize your documents and access them quickly regardless of file formats or storage location.

View and redline. View your document and mark it up without making changes to the original.

Editing. Check out your document and automatically launch the editing application, including AutoCAD, MicroStation, and Microsoft Word and Excel.

Expandability. Add additional modules that let you capture your data or build a graphical workflow for your projects.

DM/Librarian for Windows, DM/View, and DM/Redline — Intergraph's workgroup document management solution.

INTERGRAPH

Solutions for the Technical Desktop

For more information or the number of a salesperson or Business Partner in your area, call 800-345-1856 or 1-205-730-5499.

Intergraph and the Intergraph logo are registered trademarks, and Librarian for the Technical Desktop, DM/View, DM/Redline, and DM/Librarian are trademarks of Intergraph Corporation. MicroStation is a registered trademark of Bentley Systems, Inc., or Bentley offices. Other brands mentioned are trademarks of their respective owners. Copyright 1994 Intergraph Corporation, Huntsville, AL 35894-0001. Document #94-0001

Two Strategies for Client/Server Applications Development

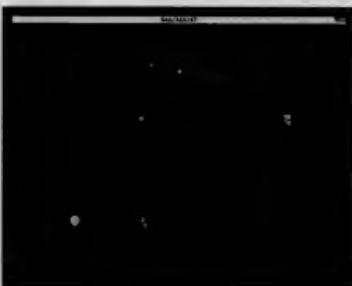
Both in One Software...the SAS® System

Only the world's leading information delivery system gives you two proven strategies for satisfying today's client/server applications development needs:

Empower Your User Community

1 The SAS System offers a secure and manageable environment for making enterprise data available on demand. And for turning that data into useful business information for strategic decision making.

Through an intuitive, dynamic, and data-driven interface, even novice business users can handle the most sophisticated requests by themselves: ad hoc queries, reports, business graphs, forecasts, analyses, and more. By making the SAS System your standard for end user access and reporting, you'll empower users to satisfy their own information requests.



Empower Your Applications Developers



2

With more self-reliant end users, developers are free to concentrate on implementing client/server applications critical to your business. Here, too, the SAS System satisfies your most demanding requirements by supporting an *iterative* approach to rapid applications development. Put strategic business systems in production quickly... even as you continue to develop and enhance them.

Object-oriented tools simplify and speed development. And support for multiple client/server models (including distributing application logic to the processor best equipped for the task) provides a flexibility unrivaled by "client only" development tools. What's more, the SAS System's portable architecture means applications look and run the same no matter where you deploy them, desktop to data center, preserving your applications investment over the long haul.

Take a Minute Now to Take Years Off Your Development Cycles

With the SAS System, you'll improve business processes rather than just automating them. Users become more independent, developers more productive, and applications more valuable...today and tomorrow. For a closer look at the SAS System—and to find out how to receive these applications development tools for a free evaluation—just give us a call at 919-677-8200.



SAS Institute Inc.
Sales and Marketing Division
Phone 919-677-8200 □ Fax 919-677-8123
In Canada: Phone 1-800-363-6397

SAS is a registered trademark of SAS Institute Inc. Copyright © 1994 by SAS Institute Inc.

Application Development

Software AG of North America, Inc. has announced Natural Engineering Workbench (NEW)Define and Natural for Windows, client/server development tools.

According to the Reston, Va., company, the products together provide functionality for the design and development of

cross-platform applications.

NEW/Define is a PC-based tool that supports the analysis phase of the application engineering life cycle.

Natural for Windows is a fourth-generation language development environment that lets users design, develop, prototype, test, deploy, manage and maintain applications. Natural programs are source code-compatible across numerous operating systems.

Prices for NEW/Define start at \$3,000

per user. Prices for Natural for Windows start at \$1,250 per user.

► Software AG
(703) 880-5050

Structured Solutions, Inc. has announced AD/Method for Client/Server and AD/Method for Business Process Reengineering (BPR), development methodologies.

According to the Atlanta company, AD/Method for Client/Server is a full-life

cycle methodology for developing small-scale and enterprise-wide client/server applications.

AD/Method for BPR lets users recommending a step-by-step approach to analyzing each level of the organization.

Both products are offered with the company's MAP/Administrator, an automated administrative platform that integrates methodology and tools into a multitasking environment.

Pricing is \$25,000, or \$5,000 for users with MAP/Administrator.

► Structured Solutions
(404) 816-7900

Command Technology Corp. has announced SPP/PC 4.0, a file manager and full-screen text editor for programmers.

According to the Alameda, Calif., company, SPP/PC 4.0 emulates IBM's mainframe ISPF/PDF so that mainframe programmers can develop applications on a PC.

Features include modifiable panels, table services, an undo/redo facility, program source colorization, file comparison, scrollable input fields, mouse support, 132-column support and 64K-byte record support.

SPP/PC 4.0 costs \$200.
► Command Technology
(610) 621-6900

Product shorts

Centerline Software, Inc. has announced TestCenter 2.0, a software testing tool for Unix C and C++ programmers. Combining runtime error detection and memory leak detection with graphical text coverage, TestCenter 2.0 lets users completely test new applications. New features include an error simulator, function-level line code coverage, user-defined error checking and support for threaded applications. Cost: from \$1,295 to \$2,995. Centerline Software, Cambridge, Mass. (617) 498-3000...

Atria Software, Inc. has introduced ClearCase MultiSite, a software configuration management product for Unix that supports parallel development and software reuse across geographically distributed development teams. The product synchronizes versioned object bases based on the update pattern selected by the software team at each location. Update mechanisms include a built-in store-and-forward system, standard Unix file transfer facilities and magnetic tape-based transfer. Cost: \$1,500. Atria Software, Natick, Mass. (508) 650-5100.



DON'T MISS THE BUSINESS PROCESS AUTOMATION EVENT OF THE YEAR!

IDC/Avante's

Work Management '94

SEPTEMBER 28 - 30 • FAIRVIEW MARRIOTT • FALLS CHURCH, VIRGINIA

CORPORATE HOSTS INCLUDE:

FileNet



Our Vision | Our Selection

IBM

IMC
INFORMATION MANAGEMENT CONSULTANTS INC.

ViewStar
CORPORATION

WANG

Xsoft
A Division of

FEDERAL

IDC
GOVERNMENT

NETWORK WORLD

REGISTER TODAY!

First 100 paid registrants will receive a complimentary copy of
IDC/Avante's Lotus Notes: Agent of Change report (a \$495 value)

To register or for more information, call (508) 935-4100

HIRING?

Don't miss one of your best recruiting opportunities all year:
Computerworld's September 5th Salary Survey issue.

Deadline: Sept 1

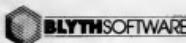
800 343-6474, x201



Thanks to us, Searle just might cure a deadly disease.

When you're trying to catch a killer, you need to move fast. & Ask any of the dedicated professionals that work at Searle, Monsanto Co.'s pharmaceutical division. For years, they've devoted countless hours—and made countless contributions—to the development of life-saving drugs. And now, with the help of OMNIS, the cross-platform, client/server tool from Blyth, they've developed a business-critical application to help them do even more, even faster. & With OMNIS, Searle was able to build an application where, for the first time, its Discovery Research Division could

easily share data among different labs in different locations—regardless of which computer system they use. An invaluable tool, it lets these employees immediately access any of their colleagues' research and, one day, just might help them catch, and cure, a deadly disease. & So if your company needs to move fast, call 1-800-840-3151, Ext. 400, and discover why, when it comes to creating business-critical applications, Blyth Software is catching on.



What you're experiencing here is a fiscally responsible adrenalin rush.

*Introducing
the affordable
ThinkPad® 360.*

The ThinkPad 360 comes with an SL Enhanced Intel® 486® SX processor and up to 340 MB[†] of storage space. Plus, 8 pre-loaded business software packages, including the OM[‡] FlightDisk,[§] SoftNet FaxWorks[®] 3.0 and Lotus cc:Mail[®] e-mail for the Advantus Network.

And with ThinkPad EasyServ[®] you can have a ThinkPad repaired and returned by courier. And just as important, ThinkPad 360 comes with a price that proves real power doesn't have to leave you penniless.

To order, see your local authorized dealer, or call IBM PC Direct[®] at 1-800-426-7126.

ThinkPad 360

* * *

Speed: 33 MHz

Display: Mono, dual scan color; dual scan color pen: 9.5° (diagonal)
Active matrix color: 8.4° (diagonal)

Battery Life: Mono: 4.6 - 8.0 hrs
Dual scan color: 3.0 - 7.0 hrs
Active matrix color: 3.5 - 7.0 hrs
Dual scan color pen: 3.3 - 7.0 hrs
(Depends on unique configuration)

PCMCIA Support: 2 Type I, 2 Type II
or 1 Type III

Hard Disk: 170, 340 MB

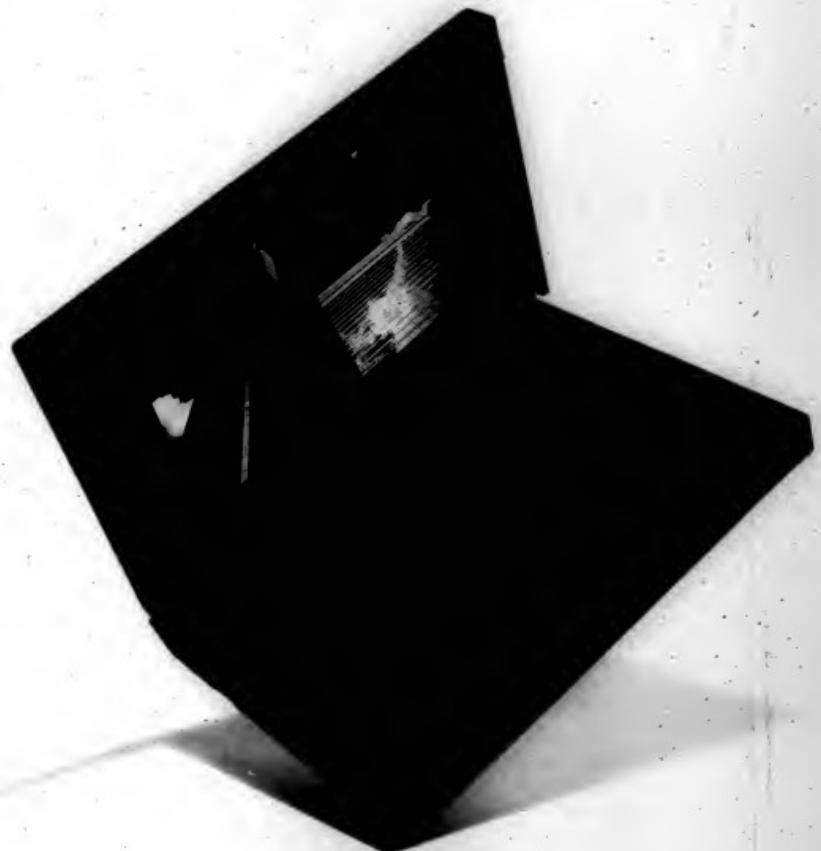
* * *

Weight: Mono: 5.6 lbs
Dual scan color: 6.2 lbs
TFT color: 6.1 lbs
Pen: 6.8 lbs

* * *

Warranty: 1-Year International^{**}
J.D. Power and Associates
Ranks IBM Highest in
Customer Satisfaction among Portable
Computer Business Users^{***}





IBM

System/360® Corporation systems are available through IBM and IBM authorized dealers. ©1965 J.D. Power and Associates. Double-Card Computer - Transaction Model, dual, read/write memory feature, ThruCard and IBM are registered trademarks and ThruCard Data System is a trademark of the International Business Machines Corporation. All other trademarks, registered trademarks, or service marks are the property of their respective holders. Reference programs listed are located in memory under the user ID IBM reference reader cards and conditions provided with the package. IBM makes no representations or warranties regarding user IBM software. Standard systems older than 3/1965 do not have



Help end the class struggle.

Here's your chance to train the next generation of knowledge workers before they show up for work.

Donate your unused computers, software, and peripherals directly to your local school.

Or contact Computers for Classrooms at one of the numbers below, and we'll direct your donations for you.

Either way, your generosity will pay off in gigabytes.

Because instead of tossing your equipment out, or selling it for a few cents on the dollar, you'll be providing our classrooms with the most powerful teaching aid since teachers.

And getting a tax deduction in the bargain.

So donate the best—and most—equipment you can afford. When you do, you'll be helping a whole new class of people to succeed.



**COMPUTERS FOR
CLASSROOMS**

*Gifts In Kind
America*
800-862-GIFT

*The East-West Education
Development Foundation*
617-542-1234

*The National
Cristina Foundation*
800-CRISTINA

*Buddy-Up
with Education*
800-53-BUDDY

COMPUTERWORLD

Management

Traditional ROI methods aren't enough to make the case for information technology. You have to find techniques for demonstrating value. **J.C.** Penney's **Dave Evans** and others have found a way to say . . .

No doubt about IT

Tom Lewcock, city manager for Sunnyvale, Calif., has two words for chief technology officer Shawn Hernandez: "Show me."

He expects Hernandez to demonstrate beyond a doubt the value of any technology project.

"Every nickel we spend on technology is a nickel not spent on important services such as education, law enforcement, transportation," Lewcock explains. "I want to make sure we are making the most productive and cost-effective decisions possible."

Don't misunderstand; Lewcock is no ordinary bean counter. This Silicon Valley city manager is technically astute and forward-thinking. And he's well aware of the nonquantifiable aspect of many technology projects. This is precisely the area he wants Hernandez to resolve.

"We already take a formal approach to measuring the quantitative cost efficiencies of all new hardware and software," Lewcock says. So Lewcock is really asking for a coherent way of determining *intangibles* — those compelling information technology benefits that defy the assignation of a number or dollar figure.

Hernandez's situation is a common one. To help him — and all other chief information officers facing similar edicts from top corporate management — *Computerworld* searched for companies that have successfully demonstrated the value of technology. The case studies presented here detail the specific methods the companies use to justify technology investments.

But pay special attention to the terminology used: *demonstrate*, not measure. Rely solely on a narrow return on investment analysis, and too much of the technology story gets distorted or lost completely.

Executives at every company *Computerworld* profiled emphasized, as Lewcock did, the need to include qualitative as well as quantitative evaluation methods. Information systems managers at these firms have developed convincing ways to combine these two methods. The critical success factor: mutual understanding between general and IS management — a set of agreed-upon values. If you will — about the business benefits from technology. And one of those values is a focus on demonstrating IS effectiveness, not just efficiency or return on investment.

Effectiveness metrics examine "whether the right things are being done for the right business functions, without regard to how much they cost. If IS is highly effective, the business benefits," says Kay Redditt, a former vice president at American Express Co. and principal of CogniTech Services Corp. in Easton, Conn., a consulting firm specializing in measuring information technology paybacks.

No doubt about IT, page 59

No doubt about IT

CONTINUED FROM PAGE 78

This is borne out by a 1993 study by Nolan, Norton & Co. in Boston, which suggests that the chief executive officers least satisfied with their information technology investment define success in terms of efficiency only. Those CEOs who defined information technology success in terms of how effectively IT met business goals, as opposed to being merely efficient, tended to feel they had received either all or most of the benefits of their investments, says John Halloran, managing partner at Nolan, Norton, who oversaw the study.

Efficiency "doesn't necessarily question whether these goals, infrastructure or processes are the right ones for your company's overall business goals."

Reddit says,

Demonstrating value in marketing, pure and simple, and marketing doesn't come easy to most IS types, says Pat Muller, a former IS executive at Digital Equipment Corp. and president of the Muller Group in Sudbury, Mass.

Muller says applying some sort of agreed-upon yardstick to information technology, if done correctly, fulfills the following two critical goals:

- IS gets essential feedback on strategic and tactical decisions.
- Senior nontechnical managers are brought into the loop, making them aware of the link between information technology and business success.

But those yardsticks, such as the ones presented in the following case studies, must also specify information technology benefits. After all, Halloran says, there can be a gap in perception between how IS is doing and how the business thinks it is doing. CIOs must communicate effectively to the people who count.

JC Penney

Buy-in from the top

At JC Penney, IS helps business managers demonstrate information technology's quantifiable and nonquantifiable benefits

At retail giant JC Penney Co., you'll never hear CEO W. R. Howell ask how much a particular technology project is costing the company — or why on earth someone thought that was a good idea. He knows. Along with six other top JC Penney managers, he sits on the capital appropriations committee, which must approve any information technology investment greater than \$150,000.

The company started the system in the early 1980s. "We initially began the process because of the fear that the business units weren't investing enough in information technology," says Dave Evans, vice president and IS director at the Dallas-based firm, which accrued \$19 billion in sales during fiscal year 1993.

"Prior to that, there was the tendency to cut investment in systems instead of cutting something else. So this procedure was instituted to cause our business units to think of technology more as an investment than an expense," Evans says.

So for the past 10 years, senior executives at JC Penney have reviewed every major information technology proposal just as they would any other investment the company is considering, Evans says.

"It's a business-like projection of costs and benefits and a subsequent reporting of results — no different than if we were thinking of opening a new store," Evans says.

The first step is for business units requesting new applications to create proposals. An information technology employee then reviews drafts of the proposals. They help business managers estimate costs — both direct and indirect — as well as expected benefits.

Benefits are divided into quantifiable and nonquantifiable. Quantifiable savings include labor reductions, material savings and lower inventory costs. Nonquantifiable benefits include improved customer service, an improved competitive position or "an expected increase in sales that we don't think we'll be able to measure exactly," Evans says.

A traditional return on investment is calculated based on quantifiable costs and benefits. The nonquantifiable benefits are included as part of the overall report to the management committee.

For example, Evans says, "a whole section of the proposal is dedicated to spelling out competitive considerations, so it may be that a particular project comes in with no quantifiable benefits yet is considered a competitive necessity."

Once a proposal has been generated by a business "sponsor" and is helped along by IS staff, it must be signed by the controller of that business unit before being sent to the capital appropriations



▲ IS director Dave Evans says JC Penney thinks of technology as investment

committee. But even if approval is won, the process is far from complete.

If a particular information technology project exceeds its budget, the capital appropriations committee must be approached for additional funds.

When a project is approved, a review date is set for after it is completed. This lets the company evaluate whether anticipated costs and benefits were realized. These "actuals" are recorded on the same proposal as the original estimates for a clear point of comparison.

No doubt about IT, page 82



WE'VE CHANGED THE WAY BUSINESS THINKS ABOUT NETWORK PRINTING.

No more stop and go. Just record shattering, high volume, on demand print performances every time you call on the QMS 2025, QMS 3225 and QMS 4525 Print Systems. Clocking in at 20, 32 and 45 ppm respectively, these speedsters are absolutely loaded with the functionality demanded by all of today's reengineering efforts: multiprinter compatibility, connectivity to virtually any network operating system, compatible with every major PDL, massive duty cycles, software loadable upgrades and QMS Crown™ multitasking technology—features that dramatically speed up and simplify your most complex print requirements. Designed to drive down costs as fast as they blaze through your heaviest workload, any one of these three print systems will finally bring data center printing to your network. Call 800 392-7548 Dept. 4018 for more information.



QMS

For service on QMS and other products, call 800 762-8894 (U.S.) • Q-Fax 800 633-7213

E-mail: info@qms.com • Canada 800 283-5508

QMS, the QMS logo and Crown are trademarks or registered trademarks of QMS, Inc. One Magnum Park, Mobile, AL 36606 205 633-4300.

No doubt about IT

CONTINUED FROM PAGE 50

If there's a delay in implementation, it sets back the evaluation date. The project manager must then go back to the requirements and request additional time. If a project goes over time and budget, you are absolutely required to get and less up," Evans says. Because of this, initial estimates of both costs and benefits tend to be conservative, he says.

The largest advantage of the system is that both the business units and top corporate managers are aware of the business benefits of information technology investments. "Previously, such benefits tended to be overshadowed," Evans says.

He says he remembers a time when all the quantitative analysis in the world wasn't as effective as merely amortizing the effect of a particular project.

"My favorite example is when we wanted to explore the 45,000-plus cost-of-sold refrigerators in our stores, at a total cost of \$20 million," Evans says. The new refrigerators would get customers through checkout lines faster. And they would automatically capture data for inventory records. But Evans knew it would be difficult to quantify the benefits.

So Evans arranged to show a videotape of the old method — a scanning system that didn't work well and off-handmade credit-card machines — along with a video of a pilot of the new system.

"A typical credit sale went from more than a minute to just 35 or 40 seconds," he says. "The president watched the videotape and said, 'We have to do this.'"

S.C. Johnson

Rule #1 for CIOs: Talk in a language business people understand. What's more businesslike than managing a portfolio of investments?

Two years ago, Bill Vink, an IS manager at S.C. Johnson & Son, Inc. — more commonly known as Johnson Wax — developed a "portfolio management" methodology for justifying and measuring the value of information technology investments.

The method helped earn Vink a promotion to group director of worldwide IS.

The reason for the shift may sound familiar. Vink had long been frustrated with the difficulties of discussing information technology projects with general business staff.

"We wanted to create a vocabulary that would allow us to converse more effectively with one another without becoming immersed in technical minutiae," he says.

Vink's first step was to divide all Johnson applications into six "portfolios" according to the corporate function — research, supports, sales, marketing, distribution, finance, manufacturing and logistics. In each portfolio the number of applications necessary to build that particular function running smoothly.

Each portfolio manager is also given cost-reduction goals for the portfolio each year. This requires them to lower the portfolio's fixed costs and to keep cutting up into more portfolios.

The point of all this, Vink says, is to think of each portfolio as the aggregate basis for the success of that business function.

Once the portfolios were defined, Vink's staff began meeting on a regular basis with various information technology customers. The purpose was to define the major process enhancements they wanted. For sales, it might be to increase sales by 50% or reduce the cost of closing sales by 15%. For manufacturing, it could be to reduce cycle time by 20% or lower inventory levels by 5%.

"These are specifically business goals, things that get decided within the business. Our job thus becomes to understand them, and our value becomes one of how we can work with you to meet

those goals," Vink says.

Once the goals are defined, the information technology team begins formulating technology strategies to meet the goals. As soon as we are clear on the general business objectives, we work on a more detailed basis to develop specific activities that IT can perform — either creation of a new system or enhancement of an existing one — to meet those objectives," Vink says.

At this point, traditional cost and budget activities take place. These are "nearly the same as just about anyone's" way of formulating a project, he says. A final budget report is created for each business unit general manager.

All project costs are divided into fixed (current) and discretionary (optional) costs. To explain fixed costs to business line managers, Vink tells them, "here are your current sales systems, and this is what they are costing you. These are your fixed costs — how much it costs you to maintain the status quo."

On the other hand, he explains, "these are your discretionary — i.e., optional — costs involved in putting in the new system." The discretionary costs include cost reductions from unplugging or modifying the existing way of doing things. Managers are presented with the incremental costs of the investment, telling them how much their expenses will change as a result of putting in the new system.

"At that point, it becomes fairly easy to weigh the expected process improvements with the additional costs. If the general manager thinks there's a better way to spend that money, he will," Vink says.

An important point, Vink says, is that everyone is clear that information technology alone did not carry an ambitious improvement initiative.

"No one imagines that IT can accomplish these types of goals single-handedly. Our role is to accomplish some percentage of the whole," Vink says.

Once the project is completed, Vink's team conducts a postmortem to deter-

MEASURING INVESTMENT PAYBACKS

G. C. Johnson divvied its applications into six portfolios and determined which ones support a major business function such as sales or logistics.

1. Each business unit general manager defines the process enhancement goals for his department.

2. An information technology team headed by a portfolio manager develops a technology strategy to meet the goals, either by creating a new system or enhancing an existing one.

3. Traditional costing and budget activities take place.

4. A final budget report is created for each business unit general manager.

5. All project costs are divided into fixed (current) and discretionary (optional). Discretionary costs include cost reductions that would result if existing systems were unplugged or modified. Managers are presented with the incremental costs of the new investment, which tell them how much their expenses will change as a result of putting in the new system.

6. The business unit weighs the expected process improvements with the additional costs and makes a final decision.

7. The IS team does a postmortem to determine how close the expected costs and benefits were to the actual results. It also determines how the overall value of a particular portfolio has been enhanced.

mine how close the expected costs and benefits were to the actual results.

The biggest roadblock to this way of doing things, Vink says, is "it's difficult to get IT people to think in these terms. They still think in terms of programming changes. When I walk down the hall and ask how a particular portfolio is doing, I still get some blank stares. However, we're making some slow but steady progress."

No doubt about IT, page 84

"As soon as we are clear on the general business objectives, we work on a more detailed basis to develop specific activities that IT can perform — either creation of a new system or enhancement of an existing one — to meet those objectives."

*Bill Vink
group director, corporate information systems
S.C. Johnson*

MEASURING INVESTMENT PAYBACKS

At JC Penney, both the business units and corporate managers approach information technology investments and review whether benefits were as expected.

1. Business units seeking new applications create proposals.

2. An IS employee reviews proposal drafts.

3. An IS employee helps business managers estimate both direct and indirect costs.

4. Expected benefits are estimated, divided into quantifiable (that will result in hard savings) and nonquantifiable benefits.

5. Traditional return on investment is calculated based on quantifiable costs and benefits. Nonquantifiable benefits are included as part of the overall report to the management committee.

6. Controller of the business units reviews final reports for approval.

7. Proposals are sent to the capital appropriations committee for action.

8. Review dates are set to review the projects after completion to evaluate whether anticipated costs and benefits were realized.

No doubt about IT

CONTINUED FROM PAGE 50

If there is a delay in implementation, it sets back the evaluation date. The project manager must then go back to the committee and request additional time.

If a project goes over time and budget, "you are absolutely required to go and 'fess up," Evans says. Because of this, initial estimates of both costs and benefits tend to be conservative, he says.

The biggest advantage of the system is that both the business units and top corporate managers are aware of the business benefits of information technology investments. Previously, such benefits tended to be overshadowed, Evans says.

He says he remembers a time when all the quantitative analysis in the world wasn't as effective as merely dramatizing the effect of a particular project.

"My favorite example is when we wanted to replace the 45,000 [point-of-sale] registers in the stores at a total cost of \$200 million," Evans says. The new registers would get customers through checkout lines faster. And they would more accurately capture data for inventory records. But Evans knew it would be difficult to quantify the benefits.

So Evans arranged to show a videotape of the old method — a scanning system that didn't work well and old hand-crunk credit-card machines — along with a video of a pilot of the new system.

"A typical credit sale went from more than a minute to just 35 to 40 seconds," he says. "The president watched the videotape and said, 'We have to do this.'" ■

MEASURING INVESTMENT PAYBACKS

S.C. Johnson A portfolio-value approach

Rule #1 for CIOs: Talk in a language business people understand. What's more businesslike than managing a portfolio of investments?

Two years ago, Bill Vinck, an IS manager at S.C. Johnson & Son, Inc. — more commonly known as Johnson Wax — developed a "portfolio management" methodology for justifying and measuring the value of information technology investments.

The method helped earn Vinck a promotion to group director of worldwide IS.

The reason for the shift may sound familiar. Vinck had long been frustrated with the difficulties of discussing information technology projects with general business staff.

"We wanted to create a vocabulary that would allow us to converse more effectively with one another without becoming immersed in technical minutiae," he says.

Vinck's first step was to divide all Johnson applications into six "portfolios" according to the corporate function: each one supports sales, marketing, distribution, finance, manufacturing and logistics. In each portfolio are the bundles of applications necessary to keep that particular business running smoothly.

Each portfolio manager is also given cost-reduction goals for the portfolio each year. This requires them to lower the portfolio's fixed costs and to keep coming up with innovative solutions.

The point of all this, Vinck says, is to think of each portfolio as the aggregate basis for the success of that business function.

Once the portfolios were defined, Vinck's staff began meeting on a regular basis with its various information technology customers. The purpose was to define the major process enhancements they wanted. For sales, it might be to increase sales by 50% or reduce the cost of closing sales by 15%. For manufacturing, it could be to reduce cycle time by 20% or lower inventory levels by 5%.

"These are specifically business goals, things that get decided within the business. Our job thus becomes to understand them, and our value becomes one of how we can work with you to meet

those goals," Vinck says.

Once the goals are defined, the information technology team begins formulating technology strategies to meet the goals. "As soon as we are clear on the general business objectives, we work on a more detailed basis to develop specific activities that IT can perform — either creation of a new system or enhancement of an existing one — to meet those objectives," Vinck says.

At this point, traditional cost and budget activities take place. These are "exactly the same as just about anyone's way of formulating a project," he says. A final budget report is created for each business unit general manager.

All project costs are divided into fixed (current) and discretionary (optional) costs. To explain fixed costs to business line managers, Vinck tells them, "here are your current sales systems, and this is what they are costing you. These are your fixed costs — how much it costs you to maintain the status quo."

On the other hand, he explains, "these are your discretionary — i.e., optional — costs involved in putting in the new system." The discretionary costs include cost reductions from unplugging or modifying the existing way of doing things. Managers are presented with the incremental costs of the investment, telling them how much their expenses will change as a result of putting in the new system.

"At that point, it becomes fairly easy to weigh the expected process improvements with the additional costs. If the general manager thinks there's a better way to spend that money, he will," Vinck says.

An important point, Vinck says, is that everyone is clear that information technology alone will not carry an ambitious implementation.

"No one imagines that IT can accomplish these types of goals single-handedly. Our role is to accomplish some percentage of the whole," Vinck says.

Once the project is completed, Vinck's team conducts a postmortem to deter-

MEASURING INVESTMENT PAYBACKS

mine how close the expected costs and benefits were to the actual results.

The biggest roadblock to this way of doing things, Vinck says, is "it's difficult to get IT people to think in these terms. They still think in terms of programming changes. When I walk down the hall and ask how a particular portfolio is doing, I will get some blank stares. However, we're making some slow but steady progress." ■

No doubt about IT, page 84



**UPDATING YOUR
STRUCTURED CABLING SYSTEM
IS ONE THING.**

**MAKING SURE IT WILL
SUPPORT YOUR NETWORK
IS ANOTHER.**

ANIXTER. Not just another distributor. Not just another supplier. Anixter is the only company that offers complete structured cabling systems. From standard to high performance, from fiber optic to coaxial, from backbone to local area networks. We offer the widest range of products and services in the industry.

1-800-ANIXTER

ANIXTER

No doubt about IT

CONTINUE EDITORIAL PAGE 82

Conoco

Lloyd Belcher was worried that budget-cutters might attack Conoco's executive information system. So he came up with a way to prove its worth.

Energy giant Conoco, Inc., jumped into the executive information system (EIS) business at the top — the very top.

The Houston-based firm's now-nominal EIS project was jump-started in the early 1980s. The reason was a request from Conoco's then-president, now president of Worldwide Petroleum Operations and Conoco's president and CEO since 1987, Steinhardt, wanted easier and faster access to data stored in the oil company's then-intrapenetrable legacy systems.

Yet even though the EIS was Steinhardt's hotly EIS manager Lloyd W. Belcher decided in 1992 to take a closer look at the system's benefits. Given the pressure to cut costs at Conoco, which is a subsidiary of E.I. duPont de Nemours and Co., Belcher figured it ought to prove the system's worth before — not after — it came under attack during a wave of budget cuts. The challenge: "We absolutely need to develop ways to demonstrate value, and traditional IS measures such as ROI simply aren't appropriate."

Belcher began by examining the literature on measuring the benefits of EIS

(see chart). He concluded that interviewing key users about perceived benefits must be a critical part of the evaluation process.

First, a team from the EIS support staff was assigned to carry out the EIS evaluation. It began by collecting statistical data on who used the system and which applications they used. The applications include data on oil prices and other industry statistics and data on Conoco's supply, products, prices and financials.

Next, an EIS user interview team was created. The group included questions on what data in the EIS system was being used, whether the system was meeting the users' needs and what, in the users' opinion, were the tangible and intangible benefits.

Key users in each department — department heads and frequent users — were interviewed for 30 to 45 minutes each, according to Belcher. The EIS evaluation team prepared reports on each department and discussed them with each departmental manager. These reports summarized in a spreadsheet the costs and benefits of each application by individual users and by the whole department. Managers could observe how their department compared with EIS usage by Conoco-wide.

Meanwhile, a report on each EIS application was evaluated. These "EIS Application Reviews" included the following:

- The purpose of the application
- What original function it replaced
- For example, access to industry statistical data replaced the need to publish weekly handbooks and distribute them to interested employees.
- Average user access per month.
- The estimated savings — both the actual costs of the EIS and the estimated costs if the EIS did not exist.
- Noteworthy intangible benefits.

Savings were quantified on application benefits worksheets. The EIS evaluation team assigned dollar values to such factors as information distribution and software replacement.

The EIS evaluation team also attempted to put a cash value on such difficult-to-quantify benefits as better decision-making and increased productivity by the executives who used the system. Productivity increases were measured by assigning a dollar value to the amount of time executives saved by finding industry statistics through the EIS. Better decision-making proved tougher to quantify; no hard-cost benefits were entered unless users could document how the EIS triggered a decision that led to a hard-cost return.

The final product was a management report on the benefits and costs of Conoco's EIS. This report detailed tangible and intangible paybacks at the end-user, department and corporate level, as well as for each application within the EIS.

As a result of this strenuous EIS-evaluation effort, management has continued to support the system. Today, the EIS encompasses more than 75 separate applications used by more than 3,400 Conoco employees scattered around the globe. The EIS has consistently remained at the top of the information technology priority list when funds are cut.

Pertinently, a paper by Belcher and Hugh J. Watson, a professor at the University of Denver in Arvada, was an award from the Society for Information Management and was published in the September 1993 issue of *MIS Quarterly*. Belcher has some advice concerning an evaluation like this. For starters, users must feel "the evaluation is open and unbiased." If users suspect you have over-inflated numbers, "it'll lose credibility," he says.

Moreover, Belcher says, if you actually do an objective evaluation, "you need to be prepared to live with the results. And that can be not-so-good news."

On the bright side, you've identified areas for improvement, Belcher says. While is, of course, the point. And it's essential to go back every 18 months or so and do the whole process all over again, he says.

"You need to get into the spirit of continuous process improvement," Belcher says.

No doubt about IT, page 85

THE VALUE OF TECHNOLOGY

THE VALUE OF TECHNOLOGY

By Lloyd W. Belcher

EIS manager

Conoco

We often hear the term "bottom-line" thrown around in traditional IS discussions, but for EIS simply isn't appropriate.

Lloyd W. Belcher, EIS manager

Conoco

After reviewing the literature, Conoco's EIS manager, Lloyd Belcher, came up with these criteria for evaluating information technology investments:

1.

The business value of the EIS should be determined at the level at which the value is received — i.e., individual, departmental or enterprise-wide.

2.

Although the evaluation should relate to Conoco's bottom line, intangible benefits should be noted, recorded and duly assessed even if no dollar value can be assigned to them.

3.

To ensure the credibility of the evaluation, all benefits should be measured conservatively.

MEASURING INVESTMENT PAYBACKS

Conoco's EIS evaluation process included five major steps

1. Collect statistical data on usage of the executive information system.

2. Identify and interview key users in each department.

3. Review each EIS application. The review documents include:

- The purpose of the application;
- What original function it replaced;
- The estimated savings;
- Average user access per month;
- Noteworthy "intangible" benefits;
- Full cost of the application.

4. Departmental managers receive a report on their department's EIS usage.

5. Top management receives a report detailing tangible and intangible benefits of the EIS.

No doubt about IT

CONTINUED FROM PAGE 82

Conoco

Value is the best defense

Lloyd Belcher was worried that budget-cutters might attack Conoco's executive information system. So he came up with a way to prove its worth.

Energy giant Conoco, Inc. jumped into the executive information system (EIS) business at the top — very early.

The Houston-based firm's now-managed EIS project was initiated in the early 1980s. The reason was a request from Constantine Nicandros, then president of Worldwide Petroleum Operations and Conoco's president and CEO since 1987. Nicandros wanted easier and faster access to data stored in the oil company's then-inappropriate ledger systems.

Yet even though the EIS was Nicandros' baby, EIS manager Lloyd W. Belcher decided in 1992 to take a closer look at the system's benefits. Given the pressure to cut costs at Conoco, which is a subsidiary of E.I. DuPont de Nemours and Co., Belcher figured he ought to prove the system's worth before — not after — it came under attack during a wave of budget cuts. The challenge: "We absolutely need to develop ways to demonstrate value, and traditional IS measures such as ROI simply aren't appropriate," he says.

Belcher began by examining the literature on measuring the benefits of EIS

(see chart). He concluded that interviewing key users about perceived benefits must be a critical part of the evaluation process.

First, a team from the EIS support staff was assigned to carry out the EIS evaluation. It began by collecting statistical data on who used the system and which applications they used. The applications include data on oil prices and other industry statistics, data on Conoco's inventory products, prices and financials.

Next, an EIS User Interview Form was created. The form included questions on what data in the EIS system was being used, whether the system was meeting the user's needs and what, in the user's opinion, were the tangible and intangible benefits.

Key users in each department — department heads and frequent users — were interviewed for 30 to 60 minutes each, according to Belcher. The EIS evaluation team prepared reports on each department and discussed them with each departmental manager. These reports summarized in a spreadsheet the costs and benefits of each application by individual users and by the whole department. Managers could also see how their department compared with EIS usage by Conoco as a whole.

Meanwhile, a report on each EIS application was created. These "EIS Application Reviews" included the following:

- The purpose of the application.
- What original function it replaced. For example, access to industry statistical data replaced the need to publish weekly bulletins and distribute them to interested employees.
- Average user access per month.
- The estimated savings — both the actual costs of the EIS and the estimated costs if the EIS did not exist.
- Noteworthy intangible benefits.

Savings were quantified on applications benefits worksheets. The EIS evaluation team assigned dollar values to such factors as information distribution and software replacement.

The EIS evaluation team also attempted to quantify benefits as better decision-making and increased productivity by the executives who used the system. Productivity increases were measured by assigning a dollar value to the amount of time executives saved by finding industry statistics through the EIS. Better decision-making proved tougher to quantify; no hard-cash benefits were entered unless users could document how the EIS triggered a decision that led to a hard-cash return.

The full cost of such application was also calculated. This included direct costs of maintaining the EIS support staff, indirect personnel costs in the business units who supported the EIS and hardware and software costs.

The final product was a management report on the benefits and costs of Conoco's EIS. This report detailed tangible and intangible paybacks at the end-user, department and corporate level, as well as for each application within the EIS.

As a result of this strenuous EIS-evaluation effort, management has continued to support the system. Today, the EIS encompasses more than 75 separate applications used by more than 4,000 Conoco employees scattered around the globe.

After reviewing the literature, Conoco's EIS manager, Lloyd Belcher, came up with these criteria for evaluating information technology investments:

1.

The inherent value of the EIS should be determined at the level at which the value is received — i.e., individual, departmental or enterprise-wide.

2.

Although the evaluation should relate to Conoco's bottom line, intangible benefits should be noted, recorded and duly assessed even if no dollar value can be assigned to them.

3.

To ensure the credibility of the evaluation, all benefits should be measured conservatively.

Moreover, the EIS has consistently remained at the top of the information technology priority list when funds are cut.

Furthermore, a paper by Belcher and Hugh J. Watson, a professor at the University of Georgia in Athens, was an award from the Society for Information Management and was published in the September 1993 issue of *MIS Quarterly*.

Belcher has some advice concerning an evaluation like this. For starters, users must feel "the evaluation is open and honest. If users suspect you have overblown numbers, you'll lose credibility," he says.

Moreover, Belcher says, if you actually do an objective evaluation, "you need to be prepared to live with the results. And that can be not-so-good news."

On the bright side, you've identified areas for improvement, Belcher says. Which is, of course, the point. And it's essential to go back every 18 months or so and do the whole process all over again, he says.

"You need to get into the spirit of continuous process improvement," Belcher says.

No doubt about IT, page 86

When the producer in L.A.
gave her changes to the script
via computer to the writer in
New York, he looked confused,
so she highlighted the revisions
on his screen.

Now you can, too.

Introducing AT&T WorldWorx™ Solutions: video, voice and instantaneous data sharing.

It's simple to use. It's affordable. And it enables you to collaborate on everything from spreadsheets to word processing to design. Because you'll not only see and hear each other, you'll be able to work on the same document at the same time, just as if you

were sitting next to each other instead of across the country. So you'll be able to save time and make decisions faster. Which could be the business advantage you've been waiting for.

So whatever your business, find out how AT&T WorldWorx Solutions can help you transform the way you work with other people.

Just call us at 1 800 828 WORK.



AT&T WorldWorx™ Solutions.
Changing the way people work...together.

© 1994 AT&T
WorldWorx is a trademark of AT&T



Management

No doubt about IT

CONTINUED FROM PAGE 84

Watkins Johnson

A technique for analyzing risks, as well as costs and benefits, helped Watkins Johnson make a build-or-buy decision

In 1990, the Watkins-Johnson Co. faced a dilemma: Should it keep its homegrown, 25-year-old suite of financial applications?

The mainframe-based, patch-to-over systems were struggling to meet the needs of the \$254 million chemicals firm based in Pijn Alba, Calif. And if the decision was made to replace them, would it be more effective to build a custom system in-house or buy one from a vendor that was already making money, though?

Thanks to methodology developed by Robert Perrone, a professor at the Center for the Study of Data Processing at Washington University in St. Louis, Watkins-Johnson was able to figure that decision successfully. So successfully, in fact, that the company will replace its traditional return-on-investment analysis methods for upcoming capital appropriations decisions with the same methodology that will do it justice in a client/server world.

Perrone lobbed his methodology "information economics." But Watkins-Johnson first encountered it under the name "IB-90," a name given to it by Hendry Corp., whose consulting group recommended it (along with several other return-on-investment techniques) to cli-

ents clamoring for a reliable benefits analysis formula.

In-depth analysis prior to making a major capital investment is not unusual at Watkins-Johnson. Every proposed capital expenditure must undergo a rigorous cost-benefit analysis that has been in place at the firm for years, says Bill Perrone, manager of internal controls, who oversees auditing functions at the firm.

But IB-90 provided us with a lot more detail than our previous way of doing a capital expenditure analysis, Perrone says.

Perrone was particularly impressed by IB-90's ability to roll the intangible benefits into the decision process hopefully. "That's something a traditional ROI can't do," he adds.

The IB-90 method involves asking key users at the company to assess the tangible and intangible benefits of the application in question, as well as the risks involved. The application can either be installed or proposed; the methodology will demonstrate the value either way.

In this particular case, information planning manager Ed Abell knew he wanted to replace Watkins-Johnson's IBM MVS financial systems. But he'd had trouble deciding whether to build his own system or go outside. When Hendry suggested the IB-90 methodology to determine how much the software would provide, Abell thought there was little to lose by trying it.

The first step in IB-90 is to form a team of key users from the affected departments. Abell first asked financial "experts"—a combination of managers and staffers in such areas as credit and collections, fixed accounting—log onto the proposed system. He asked them to formulate features-by-feature the tangible and intangible benefits they expected if such a product were installed. These benefits were to be stated on business, not technical, terms.

MEASURING INVESTMENT PAYBACKS

How Watkins Johnson weighed the options of upgrading its mainframe system or moving to a client/server system

1. A team of key users from the business units was created to work with the IS group.

2. The IS group reviewed the options of enhancing the old system or installing a new Oracle system and the impact of each on business processes.

3. A team of key users assessed the benefits (both tangible and intangible) and the risks involved in building a new system.

4. The team identified 15 tangible benefits, 5 intangible benefits and 6 risk factors for installing a new system. The team found the expected benefits were satisfactory and the risks acceptable.

5. For comparison, the team similarly examined the impact of building a system from scratch.

6. The team concluded that the company could build its own system, but the additional time required to do so was unacceptable due to the tangible and intangible benefits alone.

pers" — a combination of managers and staffers in such areas as credit and collections, fixed accounting — log onto the proposed system. He asked them to formulate features-by-feature the tangible and intangible benefits they expected if such a product were installed. These benefits were to be stated on business, not technical, terms.

A tangible benefit of the new account-

ing module, for example, would be the ability to send out payment-due letters faster. This would speed up collections on overdue amounts.

An intangible benefit, one that would be difficult to assign a dollar value to, would be more versatile financial forecasting.

On the other hand, a potential risk of the new system could be a lack of user acceptance for it.

At the end of this process, the team had thoughts of 13 tangible benefits, five intangible benefits and six risks for installing the Oracle system, Perrone says. Intangible benefits included reduced headcount and reducing the accounts receivable cycle by two days. Intangible benefits included better control of departmental budgets, improved financial reporting to executives, and problems on top of potential cash-flow problems, before the end-of-the-month closing. Risks included the system's inability to respond in quick changes in the manufacturing climate and employee resistance to any sort of change.

As a comparison analysis, the company similarly examined the impact of building a system from scratch. In that scenario, the company decided it could build its own system, but the time factor would delay tangible and intangible benefits alike.

Due to these analyses were completed and compared side-by-side, it was easy for the company to decide to buy the Oracle software and modify it, Abell says.

IB-90 also provided a way to estimate potential users on the application's features and functions, Perrone says. Indeed, although IB-90 originally stood for "cost/benefit analysis for the '90s," Perrone says Hendry bills it as a "cost-sense-building" tool because it draws users into the process in a way that they simultaneously welcome and appreciate the contribution information technology makes to their jobs.

IB-90 helped the company make an otherwise difficult decision an easy call, Perrone says. "In this case, it gave us a sanity check," he says. "In the future, it actually will determine key decisions."

By Diane Lai, free-lance writer in Woodside, Calif.

the Value of Technology

IB-90

Technology

Watkins Johnson's methodology for analyzing risks, as well as costs and benefits, helped the company make a build-or-buy decision. The company used the IB-90 technique to evaluate the pros and cons of upgrading its mainframe system or moving to a client/server system.

Watkins Johnson's methodology "information economics" is based on the premise that the company can either build its own system or buy one from a vendor. The company chose to buy one from Hendry Corp. The Hendry methodology is called IB-90, which stands for "Information Benefit Analysis for the '90s."

AGB 28-SEPT. 3

Association For Computer Operations Managers (ACOM) '94 Fall Educational Program, Chicago, Sept. 28-31. This seven-day fall computer operations, career issues in data center management, and client server issues keynote "Client/Server Computing: Where Does It Lead?" Jim Peter-Selby, vice-president and director of client server, Insignia Corp., will present a tour of Garner Group, Inc. The program runs concurrently with INESys/Fall '94, Computer Peripherals, M/CPI, Chicago, Calif. 771-7800.

Client/Server '94 East, Washington, Aug. 28-Sept. 1. The conference will focus on users, ranging from business executives to technical managers and value-added resellers and im-

Calendar

grators. Contact CMP Publications, Inc., Jersey City, N.J. 07311-2700.

Effective Methods of Systems Testing, Orlando, Fla., Sept. 1-2. Part 1—Processor Test Execution, Part 2—Quality Assurance Institute, Orlando, Fla. 1-800-365-1111.

SEPT. 4-10

Windows Solutions Conference & Exposition, San Francisco, Sept. 7-10. Keynotes: Roger Brainerd, senior vice-president of Microsoft Corp.; Steve Morris, president of IBM's personal software products division, and Rob McDerroll, vice-president of Microsoft Strategic Enterprise Services. Contact Ziff-Davis Exposition and Conference Co., Foster City, Calif. 1-800-274-0800.

Video Expo/Image World, New York, Sept. 10-11. Seminars on emerging technologies, desktop

personal software products division, and Rob McDerroll, vice-president of Microsoft Strategic Enterprise Services. Contact Ziff-Davis Exposition and Conference Co., Foster City, Calif. 1-800-274-0800.

Manufacturing '94, Detroit, Sept. 7-11. Topics will include networking, cost-cutting, quality improvement and technology integration. Contact Society of Manufacturing Engineers, Dearborn, Mich. 1-800-271-1300.

Video Expo/Image World, New York, Sept. 10-11. Seminars on emerging technologies, desktop

video, computer graphics and animation, corporate media production, industries and digital imaging and publishing. Keynotes include "Beyond Reality—New Frontiers in Computing Imaging," by Dr. Aly. Ray Smith, co-founder and president of Meiosis Software Corp., and "Non-Literal Editing—Cutting Through the Hype," by Shunro Nomura, editorial director of *AI Today* and *Computer Pictures*. Contact Knowledge Industry Publications Inc., White Plains, N.Y. 1-800-329-0537.

SEPT. 11-17

1994 International Client Forum, Orlando, Fla., Sept. 11-14. Contact Susan Springer, System Software Associates, Inc., Chicago, Ill. 60121-2800.

No doubt about IT

CONTINUED FROM PAGE 84

Watkins Johnson

The CB-90 methodology

A technique for analyzing risks, as well as costs and benefits, helped Watkins Johnson make a build-or-buy decision

In 1991, the Watkins Johnson Co. faced a dilemma: Should it keep its homegrown, 25-year-old suite of financial applications?

The mainframe-based, patched-over systems were straining to meet the needs of the \$25M annual electronics firm based in Palo Alto, Calif. And if the decision was made to replace them, would it be more effective to build a custom system in-house or buy one from a vendor that would require only minor modifications?

Thanks to a methodology developed by Robert Benson, a professor at the Center for the Study of Data Processing at Washington University in St. Louis, Watkins Johnson was able to make that decision successfully. So successfully, in fact, that the company will replace its traditional return on investment analysis methods for upcoming capital appropriations decisions with the same methodology that helped it make the move to client/server.

Benson labeled his methodology "information economics." But Watkins Johnson first encountered it under the name "CB-90" — a name given to it by Oracle Corp., whose consulting group recommended it (along with several other return on investment techniques) to cli-

ents clamoring for a reliable benefits analysis formula.

In-depth analysis prior to making a major capital investment is not unusual at Watkins Johnson. Every proposed capital expenditure must undergo a rigorous cost-benefit analysis that has been in place at the firm for years, says Bill Perrone, manager of internal controls, who oversees auditing functions at the firm.

But CB-90 "provided us with a lot more detail than our previous way of doing a capital expenditure analysis," Perrone says.

Perrone was particularly impressed with CB-90's ability to roll the intangible benefits into the decision process logically. "That's something a traditional ROI can't do," he says.

The CB-90 method involves asking key users at the company to assess the tangible and intangible benefits of the application in question, as well as the risks involved. The application can either be installed or proposed; the methodology will demonstrate the value either way.

In this particular case, information planning manager Ed Abell knew he wanted to replace Watkins Johnson's IBM MVS financial systems. But beyond that, he was stumped.

Abell debated whether to build his own system or go outside. When Oracle suggested the CB-90 methodology to determine how much value the software would provide, Abell thought there was little to lose by trying it.

The first step in CB-90 is to form a team of key users from the affected departments. Abell first asked financial "ex-

perts" — a combination of managers and staffers in such areas as credit and collections and cost accounting — to go over the proposed system. He asked them to formulate feature-by-feature the tangible and intangible benefits they expected if such a product were installed. These benefits were to be stated in business, not technical, terms.

A tangible benefit of the new account-

MEASURING INVESTMENT PAYBACKS

ing module, for example, would be the ability to send out payment-due letters faster. This would speed up collections on overdue accounts.

An intangible benefit, one that would be difficult to assign a dollar value to, would be more accurate financial forecasting.

On the other hand, a potential risk of the new system could be a lack of user acceptance for it.

At the end of this process, the team had thought of 13 tangible benefits, five intangible benefits and six risks for installing the Oracle system, Abell says. Tangible benefits included reduced head count and reducing the accounts receivable cycle by two days. Intangible benefits included better control of departmental budgets, improved financial reporting to executives and keeping on top of potential cash-flow problems before the end-of-the-month closing. Risks included the system's inability to respond to quick changes in the manufacturing climate and employee resistance to any sort of change.

As a comparison analysis, the company similarly examined the impact of building a system from scratch. In that scenario, the company decided it could build its own system, but the time factor would delay tangible and intangible benefits alike.

Once those analyses were completed and compared side-by-side, it was easy for the company to decide to buy the Oracle software and modify it, Abell says.

CB-90 also provided a way to educate potential users on the application's features and functions, Perrone says. Indeed, although CB-90 originally stood for "cost-benefit analysis for the '90s," Perrone says Oracle now bills it as a "consensus-building" tool because it draws users into the process in a way that they simultaneously welcome and appreciate the contribution information technology makes to their jobs.

CB-90 helped the company make an otherwise difficult choice an easy call, Perrone says. "In this case, it gave us a easy 'check,' says he. "The future, it actually will determine key decisions."

LaPlante is a free-lance writer in Woodside, Calif.

AUG. 20 - SEPT. 3

Association for Computer Operations Managers (AFCOM) '94 Fall Educational Program, Chicago, Aug. 25-31 — This session will cover automated operations, current issues in data center management and client/server issues. **Keynote: Client/Server Computing: Where Does It Lead?** by Peter Seely, vice president and director of client/server logical view at Gartner Group, Inc. The program runs concurrently with IS Expo Fall '94. Contact: Peri Hoffman, ACOM, Orange, Calif. (714) 997-7900.

Client/Server '94 East, Washington, Aug. 25-Sept. 1 — The conference will focus on issues, ranging from business executives in technical managers and value-added resellers and in-

tegrators. Contact: CMP Publications, Inc., Jersey City, N.J. (201) 733-0700.

Effective Methods of Systems Testing, Orlando, Fla., Sept. 1-3 — Part 2: Processes for Test Execution. Contact: Quality Assurance Institute, Orlando, Fla. (407) 365-1111.

SEPT. 4-10

Wendex Solutions Conference & Exposition, San Francisco, Sept. 7-9 — Keynotes: Roger Heitman, senior vice president of Microsoft Corp.'s developer division; Lee Riesberg, president of IBM's

Calendar

Personal Software Products division, and Robert McMillan, vice president of Microsoft Strategic Enterprise Services. Contact: Ziff-Davis Exposition and Conference Co., Foster City, Calif. (415) 378-4900.

Manufacturing '94, Chicago, Sept. 7-14 — Topics will include networking, cost-cutting, quality improvement and technology integration. Contact: Society of Manufacturing Engineers, Dearborn, Mich. (313) 271-1500.

Video Expo/Image World, New York, Sept. 8-14 — Seminars on emerging technologies, desktop

video, computer graphics and animation, corporate media production, multimedia and digital imaging and publishing. Keynotes include "Beyond Reality — New Frontiers in Computing/Imaging" by Dr. Abby Ray Smith, co-founder and president of Alahura Software Corp., and "Non-Line Editing — Cutting Through the Hype" by Shanan Noronha, editorial director of *AV Video and Computer Pictures*. Contact: Knowledge Industry Publications, Inc., White Plains, N.Y. (914) 325-1137.

SEPT. 11-17

1994 International Client Forum, Orlando, Fla., Sept. 14-16 — Contact: Susan Spadaro, System Software Associates, Inc., Chicago, Ill. (312) 641-5900.

A Cause For a New Revolution.

The ALR REVOLUTION Q-SMP

Quad 100-MHz Pentium MultiProcessing!

As its name suggests, the new ALR Revolution Q-SMP™ is nothing short of revolutionary. Even in its base configuration, this system towers over the competition both performance and value. By combining fast 90- and 100-MHz Pentium processors with 256-KB of level two write-back cache and our own performance boosting interleaved memory architecture, the Revolution Q-SMP easily clocks over 110 VAX MIPS.

But that type of power is nothing compared to this system's ultimate potential. Thanks to its unique ALR Q-SMP modular architecture, the Revolution Q-SMP can accommodate up to four 90- or 100-MHz Pentium processors. It would take a

small room full of 66-MHz 1486DX2™ systems to equal this type of symmetrical multi-processing power!

More importantly, the Revolution Q-SMP complies with the newly issued Intel® MP Spec v 1.1™ multiprocessor standard, making it compatible with soon to be released "off-the-shelf" multiprocessing versions of the most popular multi-user/network operating systems.

Matching this seemingly boundless processing power is a cavernous double-wide chassis with room for over 14-GB of fully accessible disk storage (over 22-GB with soon-to-be



pentium™



Steel ALR90 CPU and Steel EISA CPU options have model prices \$21,100 (466MHz) and \$26,700 (500MHz). 100-MHz ALR90 has 16-MB EISA RAM and 16-MB EISA CACHE. 44+ 544MB TIER 1 RAM and Microdrill Windows NT/ML/95/98/2000/ME/2003/XP/2003 Server by software. Compaq media VAX compatibility on request. 2.1

available 2-GB drives). Add 10 EISA expansion slots, three VESA VL local bus extensions, room for up to

1-GB of EDC (Error Detection & Correction) RAM, and our industry leading 5 year/15 month warranty with the first year of on-site service for free*, and you have a

up to 12-GB of data storage, it offers plenty of room for high speed disk arrays, 32-bit LAN adapters, and other network expansion options. As your network grows, the DX4 processor module can easily be replaced with a 90- or 100-MHz Pentium processor. And when your needs increase even more, you can add a second Pentium processor, converting the Revolution MP into a true, symmetrical dual processing super server!

server that's nearly impossible to outgrow.

To join the new revolution in server technology, visit your local ALR reseller today, or call us at:

800-444-4ALR

ALR

Advanced Logic Research, Inc.
9401 Jonestown, Irvine, CA 92718
TEL: (714) 581-6770 FAX: (714) 581-4740



The CW Guide to Network Operating Systems

Taming the Gnarly NOS

By Wayne Kernochan



Although they've been around for a while, enterprise network operating systems present users with some tough problems. Here are 10 issues to troubleshoot.

IT'S SIMPLE: Information systems needs a network operating system that delivers the same services for an enterprise-scale LAN internetwork that a mainframe operating system and utilities deliver for a data center.

Maybe it's not so simple. No one's done it yet.

Users have found that in real-world implementations of enterprise network operating systems, major problems can occur in the following areas: costs, service and support, systems management, installation, availability, data scalability, the name service, gateways, communications, protocol choice and supplier dependence.

Network operating system vendors, including Banyan Systems, Inc., Microsoft Corp., IBM and Novell, Inc., are tackling these problems as they arise, release by release, leaving their ultimate solutions for the future.

Their task is difficult because on one hand, the network operating system must make the network and its disparate components transparent to users and outside code so applications and utilities appear to operate on one system.

On the other hand, the operating system must make the systems in the network and the connections between them visible to administrators so they can determine the best architecture, isolate errors and allocate resources. Network considerations complicate an operating system's performance optimization, data gathering, high-availability design and interfaces with other components.

So far, Banyan has received high marks from users for administrative simplicity, and Novell has won praise from its third-party suppliers for breadth of product. Microsoft's Windows NT and LAN Manager and related IBM LAN Server are often seen as more strategic.

The following are explanations of network operating system trouble spots that will help you rein in the problems before they get away from you.

Also Inside:



Network operating system market leaders
Our 250-user survey finds that all products are created equal. Page 96



Artisoft's LANtastic 6.0
Users rate the leading low-cost alternative network operating system
Page 94

1 COSTS

Visible, hidden and opportunity costs plague network operating systems.

Visible costs are the easy ones to spot. These include training, service and support, hardware and software purchases and application development expenses. The one hitch is that network operating systems have traditionally offered fewer logging mechanisms for visible costs than management utilities.

Hidden costs are not properly detected by the enterprise's accounting mechanisms. These include the following: slush and discretionary funds, limits below which expenses are not itemized and mislabeling of costs by legacy accounting systems.

Opportunity costs are the extra unpaid effort departments put in to keep the network running. Within reasonable bounds, they represent savings and end-user commitment. When they become too large, the LAN is overstressed and headed for disaster.

2 SYSTEMS MANAGEMENT

Culture clashes and inadequate tools make management difficult.

Culture clashes come about because, traditionally, networking and systems administration professionals have operated separately. Effective systems management requires that both the solutions and the people operating them work as an integrated whole. When a breakdown in the LAN internetwork occurs, IS may see finger-pointing between the two groups as serious as any supplier disagreement.

Likewise, today's systems management tools are immature. Actually, the network operating system has made significant advances in this area, providing a common core of systems management functions that integrate network management and systems administration functions. However, what works on a 10-user LAN does not necessarily work on a 1,000-user global internetwork.

Moreover, today's network operating systems have made a conscious decision to restrict themselves to core systems management functionality and encourage third-party suppliers to provide the rest. Users will need to acquire and integrate these third-party systems management utilities with a corresponding increase in LAN

complexity and multi-supplier service headaches.

Right now, Bayan offers effective large-scale systems management functions for its own and other network operating systems via the Enterprise Network Services product, but it offers fewer third-party utilities than Novell's NetWare. Users have been slow to migrate to NetWare 4.0, Novell's entry in the enterprise-scale systems management race, and many are waiting for NetWare 4.1, tentatively scheduled for release at the end of the year. Until NetWare 4.1, and perhaps beyond, users must choose between network operating system management solutions that are not entirely satisfactory.

3 SERVICE AND SUPPORT

Network operating systems are loaded with multi-supplier support headaches.

A typical enterprise-scale LAN may involve a different supplier for the operating system, server hardware, PC LAN applications software, PC hardware, client networking hardware, uninterruptible power supply, bridges or routers, hub, shared printers, data management software, application development software and interfaces to legacy systems. Service and support share-of-cost estimates range from 40% to 70% of total five-year LAN internetwork costs.

IS managers are likely to see two manifestations of multi-supplier service and support problems: finger-pointing and support resource scarcity. Finger-pointing occurs when a supplier blames another for a LAN internetwork problem. Software providers from Compaq Computer Corp. in IBM now offer one-stop service and support. A major benefit of one-stop shopping is the service provider contacts suppliers and resolves finger-pointing in a timely fashion. However, IS should expect service providers to pass on the costs of finger-pointing resolution.

4 INSTALLATION

Variables and third-party products share network operating system installation.

Installation is an ongoing process and typically involves more than just loading the operating system's software on a server. The average LAN size is

still not much larger than 20 end users, and few servers support more than 1,000 users, which means a new server must be added every so often and connections run between the new LAN and the old ones. A typical LAN installation may involve a wiring closet, network interface cards for each client, wiring cable laid through offices, perhaps a hub and multiplexor, a bridge or router to other LANs and careful design of the LAN itself.

5 AVAILABILITY

Network operating system vendors are slow to incorporate robust availability technologies.

From the end user's point of view, network operating systems have been a significant advance in availability. When the server or network crashes, the end user can continue working on the client PC; when the client PC goes down, the end user can transfer to another PC.

However, enterprise-scale operating systems lag behind high-end systems in overall robustness. No network operating system supports full bidirectional backup and recovery between server and client. Network operating system suppliers have been slow to incorporate high-availability technologies, such as symmetric multiprocessing support, file-system journaling and clustering fall-out, compared with the Unix.

6 DATA SCALABILITY

Database scaling has its limits.

IS managers seeking to implement enterprise-scale data management on a network operating system will find serious difficulties in scaling database size beyond the 2GB- to 30GB-byte range.

Today's gating factor for increasing database size is backup speed, according to relational database management system suppliers. Parallel on-line backup on a midrange Unix server can achieve 250 bytes per hour or more. NetFrame Systems Inc.'s recent Datadet III announcement claims 90 bytes per hour. Network operating system suppliers have had to back up chores to third-party software suppliers such as Chyrene Software, Inc. Creating higher-performance parallel block backups will probably require coordination among these suppliers, server hardware suppliers and operating system suppliers.

7 THE NAME SERVICE

Poor selection can turn into a LAN administrator's nightmare.

The name service stores and provides access to key data used by the network operating system, typically user and resources information. A name service is perhaps the most vital and yet underappreciated part of the operating system. As a central repository of distributed system data, it can leverage the electronic-mail system, client/server application development software or systems management solution as well as the network operating system. On the other hand, a poorly designed or immature name service can permanently limit LAN internetwork scalability, clog the network or create a nightmare of conflicting, redundant or inaccurate information.

Even a very good name service is likely to be a problem for the user. No matter how good the technology, as the LAN internetwork grows, the name service's load on the network (as it continually reenumerates) increases. The more applications access the name service's highly useful information, the more remote name service queries add a further load.

Bayan has an excellent name service—StreetTalk—that has benefited from a decade of real-world upgrading and is available on NetWare, Microsoft and Novell. But these do not fully scale and therefore make it difficult for users to migrate to newer solutions. Novell's NetWare 4.0 appears to provide an enterprise-scalable name service, but users find it difficult to migrate older Novell Bindery name service data to the new formats.

8 GATEWAYS

Support of different environments causes gateway problems.

In a network operating system or outside of it, gateways translate from one operating environment to another across the network. Gateways translate E-mail from one format to another, files from one operating system to another, data from one database format to another. The user's most vital operating system gateways allow Macintosh and Unix workstations to join a PC LAN or link the LAN's server to back-end hosts and backbones.

Typically, the greater the difference in the network operating system or out-

Taming the NOS, page 90

Looking Upward...IS IT WORTH THE COST?

By Len Martin

UPGRADING YOUR NETWORK OPERATING SYSTEM IS NEVER easy. It's impossible to anticipate every calamity. Knowing what applications you need in order to upgrade and what network components have to be upgraded at the same time is half the battle.

Here is a system-by-system description of upgrade options: a switch from Novell, Inc.'s NetWare 3.x to 4.x, a move to the upcoming IBM LAN Server 4.0, Banyan Systems, Inc. Vines upgrade to Version 5.5 and a move from Microsoft Corp.'s LAN Manager to Windows NT Advanced Server.

Novell's NetWare 4.0

New features:

- Improved directory services.
- Hierarchical storage file system.
- Multiple-server single network log-on.
- Novell's GroupWise, provided free of charge.

If you are using NetWare 2.x or 3.1, there are a number of reasons to upgrade to NetWare 4.x.

NetWare 4.x's NetWare Directory Services (NDS) is a big one. NDS allows for a single network log-on for multiple servers — something akin to the domains found in the other operating systems. But NDS' 15-level hierarchy goes way beyond the flat domain-style architecture, allowing network administrators to structure very large networks for maximum effectiveness.

Taming the NOS

CONTINUED FROM PAGE 89

ence between the two linked environments, the greater the user's problems with the gateway. For example, a survey by Aberdeen Group in Boston has shown that a major concern of Fortune 1,000 Macintosh administrators is the ability to link their Macintoshes and PCs. A network operating system is their method of choice for doing so.

However, these users do not view a network operating system as a very good choice because the differences in Macintosh and PC file formats and code mean that files and applications are difficult to share across a mixed Macintosh/PC LAN environment.

Similar problems arise when users try to combine a network operating system with a non-PC operating system such as Unix. Unix security is different from NetWare security, and the user may need to decide which should rule or whether to build a wall between the two.



COMMUNICATIONS PROTOCOL CHOICE

Protocols on LAN/WAN levels can be problematic.

Practically speaking, users linking an enterprise-wide LAN/internet network together usually have two protocol choices: NetWare's SPX/IPX and the Unix world's TCP/IP.

NETBIOS, a favorite in the old IBM PC and newer LAN Manager/LAN Server, is often not viewed as scalable to large-scale enterprises and may perform less well in client/server communications. Old favorites, such as SNA or Digital Equipment Corp.'s DECNet, are not viable as options.

What user needs to implement SPX/IPX across the network, the enterprise administrator may face greater administrative burdens: more difficulty linking the range servers and some decrease in performance and reliability in wide-area network communications.

ing a variant of X.400.

NetWare 4.0 corrects nearly all the flaws pointed out by critics of NetWare 4.0. It will allow users to get up and running much more quickly with a flat-file structure similar to a domain or a Banyan StreetTalk layout. Taking that route precludes taking advantage of a lot of what NDS has to offer. You can take advantage of NetWare 4.0's hierarchical storage system, which is a set of programs for managing large quantities of data.

NetWare 4.x is not cheap. Implementing a 1,000-user network costs as much as \$47,000 for the network operating system software. Contrast this with the aggressive pricing of Microsoft and IBM upgrades, at \$1,495 and \$2,256, respectively. Novell, reacting to sluggish demand, cut prices for upgrading by an average of 15% last month.

IBM's LAN Server 4.0

New features:

- Full OS/2 object drag-and-drop management tools.
- Multiprotocol and adapter support that includes TCP/IP and F5 Network Interface Cards (NIC).
- Triple redesigned clients for OS/2, DOS, Windows and Macintosh.

LAN Server 4.0 promises to be a big break from IBM's past. A full graphical user interface implementation built on the System Object Model, LAN Server 4.0 will offer one of the first true drag-and-drop administration technologies in any mainstream network operating system. TCP/IP support is available as well.

If the user decides to implement TCP/IP across the network, each PC or LAN in the internetwork may see unsatisfactory slowdowns in performance and difficulties joining TCP/IP to NetWare.

If the user decides to implement SPX/IPX for client/server communication and TCP/IP for server/server communication, the administrator must use a gateway with all the gateway problems cited earlier.

SUPPLIER DEPENDENCE

Network operating system users are locked into one vendor.

As noted above, a network operating system-based LAN is a multi-supplier world, and therefore users have an unusually enormous amount of options of third-party products. However, the rate at which the problems cited above can be solved depends not so much on third-party suppliers as on the operating system suppliers themselves.

Upgrades to NetWare 4.x deliver up to a 30% performance gain at the client. Server Message Block (SMB) protocol support will allow Windows for Workgroups, Windows, DOS and Microsoft Windows NT clients to seamlessly integrate with LAN Server environments. Also, all the client software products will include at least single-session peer SMB access to the network, including their DOS clients. The LAN Server client software allows for single log-on to multiple domains and multiple NetWare 2.x and 3.x servers. If it arrives this fall, it might be a good choice for NetWare users who want to upgrade slowly.

For LAN Server is \$745

for the slower entry-level version and \$2,245 for the advanced version.

For Banyan's Vines 5.5

New features:

- Interdomain brain, which is an enter-

prise sharing feature.

• Windows interface extension.

• Portable to RISC-based CPUs.

Upgrading from Microsoft's LAN Manager to Windows NT Advanced Server is not a very complicated choice. Microsoft's Upgrade Kit for LAN Manager users costs \$585.

If you are using Microsoft's LAN Manager and have decided that NT Advanced Server is your upgrade path, my advice is to wait for Daytona, Microsoft's upcoming Windows NT upgrade. Microsoft claims that Daytona is a much improved product in terms of efficiency and performance.

The current NT Advanced Server has been shown to perform no better than LAN Manager. But what it does offer is C2 security, excellent print services — especially for Macintosh — good user and resource administration, an enterprise sharing feature known as "trusted domains," a really friendly network interface card and protocol management suite that is similar to OS/2's LAN Requester.

Martin is president of Product Logic Corp. in Roswell, Ga.

Because users find it relatively difficult to migrate an enterprise-scale network operating system-based LAN from one operating system to another and because operating systems that can manage multiple suppliers' network operating system-based LANs find it difficult to keep pace with multiple evolving network operating system products, users are to some extent tied to one vendor.

In the long run, increasing competition and the convergence of network operating system suppliers with Unix-based operating system functionality will solve the network operating system supplier dependence problem.

In addition to this trend, Windows NT adds to the mix and suppliers such as Banyan are detaching chunks of their network operating systems to add to other's solutions.

However, in the short run, the user should be prepared for this problem to get worse instead of better.

Kernochan is director of commercial systems research at Aberdeen Group in Boston.

DIGITAL

AUGUST 1994

HIGHLIGHTS

In this issue, get the latest on special offers, product and service news, and details on Digital business solutions that are right for you.

The IECpc XX Server
Performance, reliability, and expandability at a great price

Alpha AXP Technology Solutions for the Utilities Industry
Increase your competitive advantage with the platform of choice for utilities applications

Digital's PowerChannel Program
Powerful hardware/software packages that are specially priced and easy to order

TARGET+ SMART SEARCH
Text and document retrieval made easy with this advanced knowledge-based application for OpenVMS

WordPerfect for OpenVMS
Now you can buy WordPerfect for OpenVMS for \$109 per user (or less, depending on quantity)

Alpha-ready VAX Systems
Protect your current software and system investment, and get up to 50 percent improvement in computing performance



Digital's Telecollaboration Solutions Make Audio/Videoconferencing Pay Off for You

From online industry meetings to long-distance training sessions to video sales calls, Digital's telecollaboration solutions bring people together across geographies—enhancing communications, corporate relationships, and productivity. These solutions make maximum use of your existing high-bandwidth Ethernet and systems, saving you money and protecting your computing investments.

Digital's family of telecollaboration products supports Intel-based PCs and Alpha AXP workstations across local area and metropolitan area networks, and are designed to adhere to standards set by the Joint Photographic Experts Group (JPEG).

What's more, Digital's vast experience in systems integration and networking enables us to provide not only the products but also the comprehensive support that's critical to the successful integration of this emerging technology.

Work Becomes More Efficient and Effective

Our telecollaboration products can put you immediately in touch with many different locales without your ever having to leave your desk. Travel time and expenses are no longer an issue. With the flexibility afforded by full-motion videoconferencing and audioconferencing, you can dramatically boost productivity in a variety of areas, including process management, customer service, and sales and marketing management.

Rapidly improve your company's productivity and customer service.

And save time and money now.

And it's so easy. Graphical windows user interfaces with online help, tool bars, and award-winning icons hand you control of a whiteboard, sound, display, and other functions. Both workstations and PCs have the same interface, so it's easy to move from one to the other.

It's economical, too. Adding telecollaboration products to a PC or workstation costs just a little more than the PC itself. Your investment will quickly pay for itself in greater productivity and significantly lower travel expenses. That's great news for your business's bottom line.

Digital Provides the Total Solution

When it comes to telecollaboration solutions, very few companies provide a package that is as comprehensive as Digital's. Look to us not only for the right telecollaboration products (card, software, camera, microphone, headset, speakers, cables, and manuals) but also for PCs, workstations, network products, systems integration, and network services.

For more information on Digital's telecollaboration solutions,

**CALL 1-800 DIGITAL
(1-800-344-4825) and reference JZ.**

digital

Details on the DECpc XL Server



The DECpc XL Server features not only an EISA bus for your current peripherals, but also the new PCI local bus for the next generation of high-performance options.

Performance, Reliability, and Expandability at a Great Price

Let's face facts. Your network is only as reliable — and as fast — as the system server in your computing environment. If you're not getting the reliability and performance you need, maybe it's because you have old servers or overworked PCs acting the part of the server.

Users cannot afford to have their servers offline. What you need is an affordable high-performance PC server with a modular architecture that offers processor scalability, expandability, subsystem reliability, and compatibility with the most reliable software. Is all this too much to ask for in a server? Digital says no — and proves it by offering you all this and more in the DECpc XL Server.

Now, Add Choice

The DECpc XL Server family offers industry-leading server performance scalability from the 486DX2/66 MHz through today's most advanced Pentium technology, the Pentium 90 MHz processor, and up to the Alpha AXP platform or future Intel processors. For example, the industry-standard AIM technology benchmark has shown the DECpc XL Server S66 to be 50 percent faster than Compaq's highest-performing PCs, the ProSignia 560, and costs 31 percent less. This outstanding price/performance has helped the DECpc XL Server earn its "Best of Breed" honor from Datquest (March 16, 1994).

What's more, with the DECpc XL Server, you can choose from most major server operating systems, including NetWare, UNIX, and Windows NT.

And Expandability

The DECpc XL Server offers superior expandability. Thanks to a unique motherboard/daughtercard design, you

can swap in a new CPU card with cache in minutes. The same goes for additional hard disks. Simply snap them in.

And when it comes to expanding your network, the DECpc XL Server is ready with seven slots and nine bays, including up to six internal drives providing up to 8 GB of internal storage. In addition, the server comes standard with built-in CD-ROM, on-board controller graphics, and PCI SCSI.

The biggest news is that the DECpc XL Server features not only an EISA bus for your current peripherals, but also the new PCI local bus for the next generation of high-performance options. In short, you get everything you want in one neat package. And all of it is backed by DEC's three-year, on-site warranty.

For more information or to order the DECpc XL Server, call

1-800-722-9332

Lights Out — But Not for Long

With Digital's Alpha AXP Technology,
You Have the Power to Outsmart a Blackout
and Outperform Your Competition

Breakthrough customer service. It has become an increasing advantage for utility companies like yours that face competition, deregulation, environmental issues, diversification, and other forces. The truth of the matter is that in the '90s, industry leadership means putting the customer first.

How? By guaranteeing your customers the fastest time to power restoration in the event of a power failure. By keeping your customers informed about their utility status through fast delivery of critical information. By linking people, processes, and organizations together to provide fast emergency-response time. Digital empowers you with all this and more via revolutionary AXP technology running world-class partner applications for the utilities industry.

With more than 1,000 utilities customers in 72 countries, Digital understands your business issues and concerns. You have asked for solutions in the areas of SCADA/EMS, plant operations, GIS, customer services, administrative services, and more — and we've got you covered. Not only do our solutions help you build customer satisfaction, but they also

reduce your costs and improve your effectiveness — two more factors that help grow your competitive advantage.

Alpha AXP Platform: The Power of Choice for Utilities Applications

Designed to run multiple operating systems — OpenVMS, OSF/1, and Windows NT — the Alpha AXP platform has the flexibility to accommodate a wide range of computing technologies.

In addition, Alpha AXP technology is designed to deliver solutions well into the 21st century, thereby protecting your computing investment. For your utilities applications, no platform can run them faster and at a better price/performance than Digital's revolutionary 64-bit platform.

A Powerful Portfolio of Partners

Digital's Alpha AXP utility solutions portfolio continues to grow as an increasing number of business partners take advantage of the power and performance of the Alpha AXP platform. A small sampling of partners offering applications running on the Alpha AXP platform and designed for the utilities industry includes:

- ABB
- CAE Electronics Ltd.
- Ceges/ESCA
- Configured Energy Systems, Inc.
- EDS/Energy Management Associates, Inc.
- Electric Power Consultants, Inc.
- Elatag Bailey/NMTI
- Environmental Systems Research Institute, Inc. (ESRI)
- INDUS, Inc.
- Johnson Yokogawa Corporation
- Landis & Gyr Systems, Inc.
- Logica plc
- Miner and Miner Consulting Engineers, Inc.



Digital
empowers you
via revolutionary
AXP technology
running world-
class partner
applications
for the utilities
industry.

▪ Power Technologies, Inc.

▪ PowerTech Laboratories, Inc.

▪ QEI, Inc.

▪ SAIC

▪ Scientific Atlanta, Inc.

▪ Smallworld Systems Ltd.

▪ Syncom, Inc.

▪ Systems and Computer Technology, Inc. (SCT)

▪ Tellus Corp.

▪ The System Works, Inc.

▪ Unified Information, Inc.

Our extensive portfolio of offerings from these world-class suppliers gives you the freedom to select the best solution for your utility.

See how the Alpha AXP platform can help you quickly restore customer service. Request your FREE utilities video.

CALL 1-800-DIGITAL
(1-800-344-0225) and reference JMM.

Introducing WordPerfect for OpenVMS

This past spring, Digital said yes to an agreement with WordPerfect by endorsing WordPerfect word processing software for the OpenVMS operating system. We will work closely with WordPerfect Corporation, based in Orem, Utah, to integrate this software more



closely with our ALL-IN-1 office automation suite. Offering the industry's leading preferred word processing application as an option with ALL-IN-1 is proof of Digital's commitment to businesses utilizing the ALL-IN-1 product.

The WordPerfect for OpenVMS word processing application will be offered as an upgrade option for WPS-PLUS users in our ALL-IN-1 Integrated Office System, and as a migration option for users of WPS-PLUS on OpenVMS. ALL-IN-1 V3.1 includes a new functional release of WPS-PLUS.

Special Offer for ALL-IN-1 WPS-PLUS Users

If you are an existing ALL-IN-1 WPS-PLUS user who wants to upgrade to WordPerfect, or a WPS-PLUS for OpenVMS user who wants to migrate to WordPerfect, we've got the deal for you. Now, you can buy WordPerfect 5.1 for OpenVMS for \$109 per user (or less, depending on quantities ordered). What's more, your purchase will entitle you to receive WordPerfect 6.0 for OpenVMS at no extra charge. WordPerfect 6.0 for OpenVMS will offer many of the same functions and benefits as version 6.0 of the software running on other hardware.

To order WordPerfect 5.1 for OpenVMS, call 1-800-DIGITAL, press 1, reference JBU, and ask for the WPS-PLUS to WordPerfect migration upgrade (part number 32Y). For prepurchase technical assistance, press 2.

CALL 1-800 DIGITAL
(1-800-344-4022) and reference 300.

Purchase through the PowerChannel

And Save Time and Money

You want to buy solutions, not just hardware platforms. You also want a simple ordering process with few, if any, configuration hassles. We hear you. And we're responding to your needs. When it comes to purchasing powerful hardware and software solutions, Digital's PowerChannel Program helps you do so with ease.

Through the PowerChannel Program, Digital has established partnerships with selected software vendors (such as Oracle, Parametric Technology, and Viewlogic) and channels business partners to provide you with discounted, pre-optimized hardware, software, and peripheral configurations.

In the future, third-party hardware, installation of software applications, and engineering optimization may be added to the packages to provide you with a total, value-added solution that's perfect for your business.

How to Order

To order a PowerChannel package, simply call 1-800-DIGITAL. For order placement, press 1 after the prompt. Should you want details on specific configurations, pricing, discounts, or product information, press 2 after the prompt. Digital will automatically validate your order and check for proof of software purchase. Literature for each configured package within the PowerChannel Program is available through Digital's Alpha AXF FAST Fax service at 1-800-842-7027.

To order your specialty priced and configured package,

CALL 1-800 DIGITAL
(1-800-344-4022) and reference JBT.

These PowerChannel packages are available today:

APPLICATION	MEMORY PROCESSOR SYSTEM	Part Number
Alpha Systems		
SADRA	DIGI200 A2P 16MWindows NT DEC 3000-200L240SF	CS-CPA01-AAABAC CS-CPA01-DA0B
SADA		
WPS-Plus	Digital 2100 A500VOSF Digital 2100 A500VCP	CS-CPA01-IA CS-CPA01-IA
Viewlogic		
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-EA9BEC
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-FA9BPC
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-GA9BEC
Viewlogic		
ANCHINFO	Digital 2100 A500VOSF DEC 3000 Model 300V-OSF	CS-CPE01-IA CS-CPE01-IA
Viewlogic		
INFORMAX-Online	Digital 2100 A500VOS (Development)	CS-CPU01-IA
INFORMAX-Online	Digital 2100 A500VOS (Department)	CS-CPU01-IA
INFORMAX-Online	Digital 2100 A500VOS (Division)	CS-CPU01-IA
Oracle		
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-EA9BEC
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-FA9BPC
ECAD Suite	DEC 3000-300K-OSF	CS-CPA01-GA9BEC
Microsoft		
SQL Server	Digital 2100 A500Windows NT Server (Department)	CS-CPS01-1A
SQL Server	Digital 2100 A500Windows NT Server (Enterprise)	CS-CPS01-1A
Oracle		
ORACLE	Digital 2100 A500VOSF	CS-CPO01-IA
ORACLE	Digital 2100 A500/OpenVMS	CS-CPO01-IA
ORACLE	Digital 2100 A500/OpenVMS	CS-CPO01-IA/15
Memory Info		
MemoryInfo	DEC 3000-300K-OSF	CS-CPI01-EA9BEC
Memory Info		
DEC		
I-DEAS	DEC 3000-300OpenVMS	CS-CPS01-AAABUC
I-DEAS	DEC 3000-300OSF	CS-CPS01-FA9BPC
I-DEAS	DEC 3000-300OpenVMS	CS-CPS01-GA9BEC
I-DEAS	DEC 3000-300OSF	CS-CPS01-GA9BEC
Ruby		
SQL Server 10	Digital 2100 A500VOSF (Development)	CS-CPE01-IA
SQL Server 10	Digital 2100 A500VOSF (Production)	CS-CPE01-IA
SQL Server 10	Digital 2100 A500/OpenVMS	CS-CPS02-1A/2B
Parametric Technology		
Powermax	DEC 3000-300LX-OSF	CS-CPL01-IA9BEC
Powermax	DEC 3000-300LX-OSF	CS-CPL01-FA9BPC

For Text and Document Retrieval, You Need **TARGET->SMART SEARCH**

With the increasing amount of documentation and other textual information generated by your business on a daily basis, TARGET->SMART SEARCH — an advanced knowledge-based application for text and document retrieval — can play a key role in your information system strategy.

TARGET->SMART SEARCH, developed by Target Systems in conjunction with Digital, allows for the free-form

searching of textual database, articles, and other document bases.

What's more, you can specify the information you see through a series of either English or Boolean statements. The system then searches up to 64 databases at a time for occurrences of the word, or string of words that has been specified. Queries are conducted on the full text and the article titles.

Beyond the obvious Customer Help Desk applications, TARGET->SMART SEARCH may be applied to manage

a variety of information needs: tax law, legal issues, government regulations, healthcare policies, scientific research, contract analysis, and more.

TARGET->SMART SEARCH for OpenVMS is available today, with other platform availability slated for the near future! Site and corporate-wide licenses are also available.

Purchase price is \$7,750 to \$15,495, depending on the size of the host processor.

**For more information or to order
TARGET->SMART SEARCH, call**

1-800-233-3493

Fast Facts on Alpha AXP



The news about Digital's Alpha AXP technology keeps getting better and better.

- In a recent benchmark, Alpha AXP systems running DEC Rdb software not only broke the world record for speed — but tripled it. The official results were 3,692.02 tpsA at \$4,673/tpsa.
- The new Digital 2100 Server Model A500MP, announced in April 1994, has already generated a tremendous amount of interest — plus hundreds of orders in the pipeline.
- There are more than 5,000 applications shipping on Alpha AXP systems today. To receive a copy of the Alpha AXP Applications Catalog, call your local Digital office.
- Digital recently won a \$27 million order from the U.S. Department of Veterans Affairs to install 500 DECpc AXP 150 systems — along with software, associated services, and support.
- Alpha AXP systems account for 50 percent of Digital's systems revenue. This milestone was reached after only 18 months.
- Digital's Alpha AXP business alone would rank in the top 200 on the Fortune 500, based on revenue from the last four quarters.

New Alpha-ready VAX Systems Offer Superior Performance Improvements Plus Savings

Better performance means better numbers. With faster processing and improved access to corporate information, productivity naturally goes up. And that kind of increase does wonders for your bottom line. That's why there's no better time to upgrade to an Alpha-ready VAX system. With these systems, not only can you protect your current software and system investment, but you can also receive a 10 to 50 percent improvement in computing performance. As part of your move to the Alpha AXP platform, consider the following Alpha-ready VAX systems.

The VAX 7000 Model 710 System

Designed with a 137 MHz NVAIX chip and more than 50 VUPs per CPU, Digital's VAX 7000 Model 710 delivers 50 percent more performance than the Model 610 — with no price increase. The VAX 7000 Model 710 is ideal for a variety of computing styles including centralized or distributed, traditional timesharing or open client/server, or commercial or technical computing. You can use this system for new business-wide applications or cluster it into existing systems. What's more, with the VAX 7000 Model 710, your path to the Alpha AXP platform is a smooth one. A simple board upgrade from the VAX platform to the Alpha AXP platform is all it takes.

The VAX 4000 Model 705A and 705A Systems

Ranked as the highest-performing member of the VAX 4000 family, the VAX 4000 Model 705A runs at an impressive 275 TPS (estimated) — but at a price in line with the earlier Model 600A. Digital's VAX 4000 Model 505A, rated at

Cost of Operation Data for a Sampling of Systems*

This same basic calculation can be done using other currencies and local data to arrive at specific costs for your particular area.

185 TPS, is rich in CPU performance, but with the low price tag of the earlier Model 500A. In addition, you can configure industry-standard SCSI disks, tapes, and CD-ROMs in the VAX 4000 rackmount systems (Models 500A through 705A) through the HS1050 SCSI-to-SCSI controller that's now built in. The major benefit? You can protect your investment in OpenVMS clustering technology and, at the same time, acquire the flexibility to choose from a variety of industry-standard SCSI devices.

The MicroVAX 3100 Model 85 and 95 Systems

The good news is that Digital's new MicroVAX 3100 systems offer you 30 to 50 percent more performance than their predecessors (Models 80 and 90). But the best news is that you get this extra performance at no additional cost. Upgradable to Alpha AXP systems, the MicroVAX 3100 family of systems features factory-installed OpenVMS software; optional terminal, modem, and wide area networking connections; and in-cabinet board upgrades.

For more information or to order any of Digital's Alpha-ready VAX systems,

CALL 1-800 DIGITAL

(1-800-344-4025) and reference JCI.

ALPHA

GENERATION

System	Performance (TPS)	Annual Power	Annual Power	Annual Maintenance	Total Annual Maintenance Cost
MicroVAX 3100-85	185	\$ 82	\$ 110	\$ 852	\$ 1,024
VAX 4000-705A	180	\$ 82	\$ 147	\$ 964	2,033
VAX 4000-505A	185	\$ 80	\$ 21	\$ 3,976	4,178
VAX 4000-705A	275	\$ 80	\$ 21	\$ 3,976	4,178
VAX 7710	300	233	3,180	\$ 5,904	8,728
Existing Systems					
MicroVAX II	7	\$4	212	1,824	2,000
MicroVAX 3600	30	147	875	4,785	5,600
VAX 4000-300	60	90	527	1,958	2,584
VAX 6610	162	236	245	5,785	6,275
VAX 8500	47	176	1,062	20,160	22,237
VAX 9000	33	473	3,066	16,396	22,865

*Refers to open (OpenVMS) source systems.

Power = \$27 per KVA, FC per year; Power = \$37 per KW.

Maintenance = Digital monthly service charge for hardware only; Min. = Rd., S - 5

* Estimated transactions per second

Buyers' Scorecard: NetWare 3.x rates low in ease of installation, cost

By Michael Sullivan-Trainer

User satisfaction with network operating systems, like beauty, is in the eye of the beholder. More than 200 users surveyed in our Buyers' Satisfaction Scorecard gave mixed ratings to the market-leading systems.

Novell, Inc.'s NetWare 3.x received a low rating from its 59 users in terms of ease of use and cost. This despite its ubiquitous nature as the world's most widely installed network operating system and its ability to work with a vast array of low-cost third-party products through NetWare Loadable Modules.

The chief reason for the dissatisfaction with usability: low ease of installation. Nearly one in three users surveyed said installation was "complex and not intuitive."

"It's a little puzzling," says Robert Harbison, president of Network Integrations Consultants, a Sausalito, Calif., enterprise networking consultant. "Maybe Novell didn't introduce the new installation procedures very well, like NetWare Connect and Message Handling System, but after you get through the learning curve, it's very smooth."

NetWare improves

Another noteworthy result is that NetWare 4.x received higher satisfaction ratings than 3.x.

NetWare 4.x features Windows Directory Services, which can give administrators a central view of their network. But the complexity it adds to the directory tree resulted in one of the lowest ease-of-configuration management ratings.

High ratings in compatibility for NetWare 3.x were no surprise because of third-party support. But the other products offer less compatibility based on the environments they support. Microsoft Corp.'s Windows NT Advanced Server is largely compatible with Windows 3.1, for example. It is not even in sync with Microsoft's previous network operating system, LAN Manager.

EDITOR'S NOTE

This week's *Buyers' Satisfaction Scorecard* features an improved method of reporting ratings. Instead of the raw scores obtained by each product, the charts show the ratings weighted by a user importance rating that more accurately reflects the performance of the products in the survey.



IBM's OS/2 LAN Server 3.x suffers from incompatibility with non-IBM products and the fact that OS/2 is layered on top of LAN Manager. This adds another level of complexity to installation and configuration.

Banyan Systems, Inc.'s Vines 5.5, the highest satisfaction achieved, also boasts the highest-priced network operating system at \$2,905 for 10 users and \$14,995 for 250 users. Yet users still awarded it a competitive rating.

What's behind these seeming anomalies?

"Users evaluate what they see within their own environments," Harbison says. "Novell has taken an open platform approach; NT is an everything approach; IBM an IBM approach and Banyan a Banyan approach. They all do well within their own approaches."

The vendors can be reached at the following numbers: Banyan Systems, Inc., Westboro, Mass., (800) 828-2604; IBM, Armonk, N.Y., (800) 455-2968; Novell, Inc., Provo, Utah, (800) 455-1267; Microsoft Corp., Redmond, Wash., (800) 426-9400.

This survey was conducted and tabulated by First Market Research in Austin, Texas.

Sullivan-Trainer is Computerworld's senior editor. CW Global

What's important in a network operating system?

Ranking in order of importance
Survey base: 500 users

COMPATIBILITY	
• Desktop operating environment compatibility	
• Server operating environment compatibility	
• Installed applications compatibility	
• Windows 3.1 compatibility	
PERFORMANCE	
• Reliability of operation	
• Ability to remember file locations	
• Speed of operation	
• Consistency of data transmission	
• Efficient use of memory	
SUPPORT	
• Responsiveness of vendor's service	
• Quality of vendor's support	
COST	
• Acquisition and maintenance costs	
• Value for the dollar	
EASE OF USE	
• Ease of installation	
• Ease of configuration management	
• Ease of security management	

Firing Line: Artisoft's LANtastic 6.0, a viable alternative for smaller networks

LANTASTIC 6.0

Computerworld's Firing Line is an evaluation based on interviews with major users of corporate and educational installations. The product under evaluation is being used in live application environments.



- LANtastic 6.0 is a peer-to-peer network operating system built on a per-node basis and designed to connect small to medium-size groups of PCs.
- The modular design of Version 6.0 allows users to install only those functions needed, reducing memory requirements while increasing speed and efficiency.

De spite their predominance in large companies, enterprise network operating systems are not the only choice for network managers. For workgroups, peer-to-peer networks can be a low-cost alternative to enterprise systems. Artisoft, Inc.'s LANtastic, the market leader in this second tier (see chart below for other peer-to-peer systems), transforms the connected PCs into not only clients but servers as well, allowing users to access shared files and applications. Aiming to meet the needs of large workgroups, Artisoft recently added functionality and increased its flexibility in Version 6.0.

Other peer-to-peer network operating systems

- AppleTalk from Apple Computer, Inc., Cupertino, Calif. (800) 776-2332
- Creative Connector from Creative Computing Corp., Belmont, Calif. (800) 825-2638
- Desk to Desk from CBSI, Inc., Norcross, Ga. (800) 344-8426
- InvisibleLAN from Invisible Software, Inc., Foster City, Calif. (800) 882-9692
- LANtastic from Robertson-Carsen & Associates, Inc., Atlanta, Ga. (404) 512-0600
- Microsoft Windows for Workgroups from Microsoft Corp., Redmond, Wash. (800) 426-9400
- MoosieALL from Moosie Computers, Inc., Los Gatos, Calif. (800) 882-0673
- Pathworks from Digital Equipment Corp., Maynard, Mass. (617) 344-8282
- Paragon from Paragon Software, Inc., Provo, Utah (800) 553-1267
- PeerNet from Performance Technology, Inc., San Antonio, Texas (800) 433-5267
- Products LANtastic from Hayes Microcomputer Products, Inc., Atlanta, Ga. (800) 964-2937
- SilverNet-OS from NetSource Inc., Santa Clara, Calif. (408) 246-1108
- Simple LANtastic from Artisoft, Inc., Tucson, Ariz. (800) 809-2092
- Shared LAN from Tura Computer Systems, Inc., Mountain View, Calif. (800) 636-4272

Evaluators for this survey included a bank, an engineering consultant, an electronics manufacturer and a software consultant.

COMPATIBLE OPERATING ENVIRONMENTS

One of the most significant features of LANtastic is its universal client technology, which allows seamless connectivity to Server Message Block-based networks such as Microsoft Corp.'s LAN Manager and Windows NT and IBM's LAN Server. Artisoft has also licensed Novell, Inc.'s NetWare Core Protocols, giving Version 6.0 workstation access to NetWare 2, 3 and 4 servers for file and print services.

Manufacturer: "In older versions we would have to manually change some settings, but Version 6.0 puts the proper drivers in the right place."

USE OF CONFIGURATION MANAGEMENT

Users found configuring and monitoring a basic network setup was extremely easy, but they had difficulty trying to give special access privileges.

Bank: "It's easy to allocate resources for files and give everyone their read, look and execute capabilities, but it gets very tricky when limiting read access to just certain individuals."

SPEED OF OPERATION

Version 6.0 is now modular, allowing users to load only the features needed, thereby lightening the performance load.

Manufacturer: "It's significantly better than Version 5.0, but it's difficult to tell how much of the improvement is from the new version and how much is from our hardware upgrades."

RECOVERY FROM FAILURES

Version 6.0 includes auto-retry on disconnect, which automatically attempts to reconnect any broken server connection.

Engineering consultant: "If a connection is lost, our users don't have to relog. All we need to do is click on the icon, and it remakes the previous connection."

SERVICE AND SUPPORT

Engineering consultant: "Their support is great once you get a hold of them. The problem is getting a hold of them."

Artisoft's LANtastic 6.0

Artisoft, Inc., Tucson, Ariz. (800) 670-7100

The total score is a weighted average based on the following criteria: 1) ease of installation, 2) cost, based on user requirements on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Categories are presented in order of importance in scores.

3.3	TOTAL SCORE
4.0	COMPATIBILITY WITH INSTALLED APPLICATIONS
4.0	COMPATIBILITY WITH OPERATING ENVIRONMENT
3.2	RECOVERY FROM FAILURES
4.3	DATA TRANSMISSION CONSISTENCY
3.2	SERVICE
4.0	SPEED AND EFFICIENCY
4.0	SECURITY MANAGEMENT
3.7	CONFIGURATION MANAGEMENT
4.0	COST
4.0	EASE OF INSTALLATION

ARTISOFT RESPONDS

Viewing the results of network changes before they take effect is possible. The effects users are viewing as a result of their changes to the network do not take effect until the netmgr program is exited. Changes can be reversed before they go through.

The new Monitor and Managed Network Activity screens will pick up only those clients running LANtastic Version 6.0. Clients using Version 5.0 will need to upgrade to take advantage of this function.

Fixing does not need to go through LANtastic's mail system. When you choose the fax gateway as a printer and start printing, a pop-up window will appear and ask you for dialing information. For more information, see readme2.doc.

Written by Computerworld senior researcher Krista Harrell.

FAX NO. 508-626-2705

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95* per year - a savings of \$8.00 off the basic subscription price.

First Name _____ M _____ Last Name _____
Title _____ Company _____
Address _____ City _____ State _____ Zip _____
U.S. Only Canada \$95 Mexico, Central/South America \$150 Europe \$200, all other countries \$205 Foreign orders must be prepaid in U.S. dollars

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
10 Manufacturing/Processing
20 Financial/Insurance/Real Estate
30 Medical/Law/Religious
40 Government/Political
50 Business Services (except CP)
60 Communications/Informational
65 Communications/Systems/Public Utilities
75 Mining/Construction/Petroleum/Refining/Agric.
80 Manuf./Supplier of Computers/Computer
90 Systems Integrators, Vendors, Computer Services
100 Distributors/Resellers/Wholesalers/Marketers
110 Computer/Peripherals/Other/Intl. Reseller
120 Other _____

(Please Specify)

2. INDUSTRY/DEPARTMENT (Circle one)
10 Chief Information Officer/Executive President Asst. VP

- 20 Managerial/Supervisory
21 Dir/Mgr MIS Services, Information Center
22 Dir/Mgr Sys. Dev., Design, Planning, Admin Sys.
23 Dir/Mgr PC Mktg., Sales, Distribution
24 Dir/Mgr Sys. Development, Sys. Architecture
25 Dir/Mgr Sys. Support, R&D, Technical Development
40 Engineering, Scientific, R&D Tech. Mgr.
50 Sys. Integration, Consulting, Marketing Mgr.

3. OTHER PROFESSIONAL MANAGEMENT

- 11 President, Owner/Partner, General Mgr.
12 Vice President, Ass't Pres., Exec. Vice Pres.
13 Treasurer, Controller, Finance Officer

3. Do you use evaluate, specify, recommend, purchase
(check one work)

Operating Systems

10 Mac OS

11 Windows NT

12 Windows

13 Unix

14 Linux

15 Development/Design Tools, T/Bs

16 Business Products

17 Yes

18 No

COMPUTERWORLD

E4433-7

Fill it out Fast
Save \$8

FAX NO. 508-626-2705

Yes, I want to receive my own copy of COMPUTERWORLD each week. I accept your offer of \$39.95* per year - a savings of \$8.00 off the basic subscription price.

First Name _____ M _____ Last Name _____
Title _____ Company _____
Address _____ City _____ State _____ Zip _____
U.S. Only Canada \$95 Mexico, Central/South America \$150 Europe \$200, all other countries \$205 Foreign orders must be prepaid in U.S. dollars

Please complete the questions below to qualify for this special rate.

1. BUSINESS/INDUSTRY (Circle one)
10 Manufacturing/Processing
20 Financial/Insurance/Real Estate
30 Medical/Law/Religious
40 Government/Political
50 Business Services (except CP)
60 Communications/Informational
65 Communications/Systems/Public Utilities
75 Mining/Construction/Petroleum/Refining/Agric.
80 Manuf./Supplier of Computers/Computer
90 Systems Integrators, Vendors, Computer Services
100 Distributors/Resellers/Wholesalers/Marketers
110 Computer/Peripherals/Other/Intl. Reseller
120 Other _____

(Please Specify)

2. INDUSTRY/DEPARTMENT (Circle one)
10 Chief Information Officer/Executive President Asst. VP

- 20 Managerial/Supervisory
21 Dir/Mgr MIS Services, Information Center
22 Dir/Mgr Sys. Dev., Design, Planning, Admin Sys.
23 Dir/Mgr PC Mktg., Sales, Distribution
24 Dir/Mgr Sys. Development, Sys. Architecture
25 Dir/Mgr Sys. Support, R&D, Technical Development
40 Engineering, Scientific, R&D Tech. Mgr.
50 Sys. Integration, Consulting, Marketing Mgr.

3. OTHER PROFESSIONAL MANAGEMENT

- 11 President, Owner/Partner, General Mgr.
12 Vice President, Ass't Pres., Exec. Vice Pres.
13 Treasurer, Controller, Finance Officer

3. Do you use evaluate, specify, recommend, purchase
(check one work)

Operating Systems

10 Mac OS

11 Windows NT

12 Windows

13 Unix

14 Linux

15 Development/Design Tools, T/Bs

16 Business Products

17 Yes

18 No

COMPUTERWORLD

E4433-7



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS MAIL PERMIT NO. 55 MARION, OH 43306

POSTAGE WILL BE PAID BY ADDRESSEE

COMPUTERWORLD

P O BOX 2044
MARION OHIO 43306-2144



Symposium

Symposium
1994
IT Expo

ITExpo '94

October 5-7, 1994

Walt Disney World Dolphin Hotel

Lake Buena Vista, Florida

ITExpo is a three-day high-technology learning lab where senior IT decision-makers from Fortune 1000 organizations immerse themselves in interactive demonstrations staged by producers and providers of the hottest new hardware, software, and services. A partial listing includes:

Amdehi Corp.
Andynn Computing Ltd.
Apple Computer Inc.
Arbor Software
ARDIS
Aspect Telecommunications
AT&T Global Information Solutions
Beeze International Inc.
Cahilltron Systems Inc.
Capcos Corp.
Complex Architectures Inc.
Computer Associates International Inc.
Data General
Digital Equipment Corp.
Dow & Bradstreet
Eastman Kodak Co.
Exatax Information Systems
FileNet
Fujicron Technologies
GE Rental/Laser & GE Capital Co.
IBM AS/400 Division
IBM Enterprise Systems
IBM Networking Systems
IBM Storage Systems
IMRS
Informatics Builders
Informatics Dimensions Inc.
Informix Software
Integral Systems
Interfacing Technologies Corp.
Information Resources Inc.
JetForm Corp.
Kendall Square Research
Keyword Office Technology Ltd.
Lotus Development Corp.
Micro Focus
Mobile Management Systems
Moors Advanced Services
eCURE
Neuron Data Inc.
Norand Corp.
Novadigm Inc.
Progress Software Corp.
Pyramid Technology
Ross Systems
RSD America Inc.
Sales Technologies Inc.
SAP America Inc.
SAS Institute
SHL Systems House
Silicon Graphics Inc.
Sprint
Sterling Software
Tandem Computers Inc.
Tesseract
Unity Corp.
Unikix Technologies
Unisys Corp.
Verity Inc.
Walker Interactive Systems
XcelleNet

If your company is interested in exhibiting at ITExpo, please call Merril Goldin at Gartner Group, 203-978-6214.

To
Speed

**the Development of Complex Applications,
You've Always Needed the Right Tools
for the Right Jobs.**

**Now You've Got
the Right Tool
for Finding Them.**

Turn to the New

Application Developer's Toolbox

on Page 119.

COMPUTERWORLD
Marketplace

The Product Classified Source for IS Buyers

In Depth

MAKE WAY FOR WIZARDS

Full-time, on-line teachers attempt to prove that software really can make life easier rather than more difficult. But how successful are they?

If there's one thing computer users really need, it's help. Even the most sophisticated among us don't have time to master the hundreds of new features that keep popping up in application software. The result is wasted time, lost productivity and underused computing power.

With that in mind, software makers are beefing up their word processors, spreadsheets, graphics and publishing programs with a new breed of on-line help. Known as Wizards (coined by Microsoft Corp.), Coaches (WordPerfect Corp.), Tutors (Borland International, Inc.) and Advisers (Software Publishing Corp.), these systems provide highly specific ways to help users work smarter.

The systems are not intended to solve rudimentary problems such as "Where's the undelete key?" or "How do I get back into Windows?" Rather, they offer easy ways to perform tedious tasks such as a mail merge and provide prepro-



Jared Spool, founder of User Interface Engineering: 'We really haven't seen a good Wizard yet'

Wizards, page 102

BY BRONWYN FRYER

How Does American Airlines
Manage A Network That
Handles 500,000 Reservations
Every Day?

THEY FLY WITH NORTHERN TELECOM.

Managing over 250,000 terminals in 70 countries is no easy job. That's why American Airlines came to Northern Telecom to help build one of the largest and most reliable private networks in the world. With the high quality and dependable performance of Magellan enterprise networking solutions, American Airlines

provides the same excellent service on the ground as their customers receive in the air. To see how Magellan networks can help your company take off, call 1-800-NORTHERN (press 1 and ask for extension 601). Northern Telecom. Discovering and delivering the best solutions in voice, video & data communications systems worldwide.



Magellan is a trademark of Northern Telecom.
© 1990 Northern Telecom.

Wizards

CONTINUED FROM PAGE 90

grammed forms such as invoices, outlines or other business documents, which can be used as is or customized to suit individual needs.

The help systems are named for the way they are designed to work. Wizards veil their tricks; Coaches guide users through the steps of performing a task. But how well do they work? Do they represent the next generation of on-line help?

To find out, *Computerworld* asked Jared Spool, founding principal of User Interface Engineering in Andover, Mass. He says that the advent of these help systems is a step in the right direction, but they have a long way to go. Unfortunately, he says, for now they won't increase productivity, slash the high cost of technical support or eliminate the need for help desks.

Before they can work that kind of magic, Spool says, software vendors need to acquire a far better understanding of how users like to use applications. What's more, they need to replace the cryptic language used to describe software functions with terms that make practical business sense. As he tells Bronwyn Fryer in the following interview, in their current incarnation, Wizards — a term he uses to refer to all vendors' help systems — do more to confuse than to help us use software.

Q What does your company, User Interface En-
gineering, do?

A We consult to various companies and set up user observation labs. We also do studies. For example, we wrote the productivity study on spreadsheets for Lotus Development Corp. We set up the labs to observe how users work and provide vendors with feedback on features users need from on-line help functions. So we've learned a lot about functions such as Wizards in our practice.

Q What is the origin of so-called Wizards, Es-
pecially Coaches?

A Companies continuously ask us how developers can help users work their way through complex procedures. Our answer is Wizards. We used to call this kind of technology, "Hey Al," named after the common experience of standing up and saying, "Hey Al! How do I do this?" Now Wizards are trying to replace Al instead of giving examples, as most on-line help functions do. Wizards use your problems as the basis for the solution. It's quasi-magical.

Designers try to hide the detail like a magician hides the details of the trick. Through the use of complicated interface

designs, Wizards say, "If you tell me only a few things, then I will create a chart for you that is just what you wanted."

**Users used
to shout:**

**"Hey Al! How do
you do this?"**

**Now Wizards are
replacing Al.**



Q How did on-line interfaces evolve into Wizards,
Experts or Coaches?

A After the introduction of on-line tutorials, Lotus' Ami Pro and Microsoft's Word started using these dialog boxes to help users with mail merge. There was no name for them. They were simply graphic boxes with arrows that functioned as menus that were half-tutorial, half-dialog box. The first Wizards appeared in Microsoft Publisher. They gave users a guided tour of styles, showing them how to choose, for example, whether to place letterhead on the top or bottom of a business document. They were kind of like templates but with a friendlier face.

Q Based on what you've observed in user labs,
how effective are these kinds of help func-

tions?

A We've found that as people walk through five screens in the Excel Chart Wizard, for example, the terminology in the screens is confusing. It got them thinking about how to fix a chart that didn't seem fixing. Users would walk through the five screens, pressing the Chart Wizard button again and again. Up would come the first screen, the fourth and fifth screens, but they couldn't get to the second and third screens without starting all over again. Plus, the Chart Wizard only works for simple charts with a dozen rows and columns.

The Function Wizard in Excel, too, is problematic. It's supposed to help people use spreadsheet functions. If you don't know how to calculate the interest on a loan, it's supposed to walk you through it and figure out what to type in. But it assumes you know these technical, jargony phrases such as "logical test" and "array." Contrast that to the help in Lotus 1-2-3, in which the chart does clever things. If it notices text, for example, it creates a title. It can detect the presence of labels. The people we observed were able to get charts on the screen faster, and they were more likely to create the chart they wanted.

Q What are the most common problems users have with on-line interfaces?

A If they are too detailed, they bore users fast. If they lack substance, they don't help. They also have the bad habit of making you too aware you're being trained. The examples have nothing to do with your actual work. A user should be able to say immediately, "Oh, I can see how that translates into my business problem."

Q What are the problems with Wizards, as soft-
ware developers are implementing them now?

A Here's an example. Let's say you are a user. You tell Merlin, "Make me a husband." Merlin asks, "Male or female?" You answer "Male," and he then asks "Caucasian or Asian?" You choose one, and the process continues. After 40 questions, the guy appears. He's not



**Wizards are
quasi-magical. Their
designers shield you
from detail like
magicians hide from
you the tricks of
their trade.**

what you expected. So Merlin asks again: "Male or female?" That's the problem with Wizards. In the Chart Wizard, it's worse. It makes you start from the middle; it doesn't let you change the things you already answered. And 50% of the time it doesn't ask you that question again. The Microsoft Publisher Wizard is better. You go through the questions only once per document; the answers are global and they stick. It works well, and users are happy with it. Wizards are a good idea for heavily procedural activities such as mail merge or creating a database, but we have yet to see an implementation that knocks our socks off.

Q What characteristics make for a good Wizard?

A We really haven't seen a good Wizard yet. Microsoft Publisher is the best. Users with no desktop publishing experience can create sophisticated newsletters with it. It makes five of five brochure flavors you want. It lays out the page. It brought publishing to the masses.

Q Do Wizards currently help or hinder pro-
ductivity?

A I'd be suspicious of anything that claims its Wizards improve productivity. They usually have a negative effect by confusing novices and slowing down expert users. Skip Wizards for now, and wait for the next generation. A lot of people are working on the problem, and there's great potential.

Q When will we see a good Wizard?

A It will probably be at least a year. People developing these kinds of help functions have to take a close look at what they are trying to accomplish first. It's not a straightforward thing.

Fryer is a free-lance writer in Boulder Creek, Calif.

COMPUTERWORLD's Code of Ethics

1. Computerworld's first priority is the interest of its readers.
2. Editorial decisions are made free of advertisers' influence.
3. We insist on fair, unbiased presentation in all news and articles.
4. No advertising that simulates editorial content will be published.
5. Plagiarism is grounds for dismissal.
6. Computerworld makes prompt, complete corrections of errors.
7. Journalists do not own or trade in computer industry stocks.
8. No secondary employment in the IS industry is permitted.
9. Our commitment to fairness is our defense against slander.
10. All editorial opinions will be clearly labeled as such.

WORDS WE LIVE BY.

When you pick up a copy of *Computerworld*, you know you're getting the most objective, unbiased news and information in IS. Our code of ethics guarantees it.

Why do we make such a big deal out of editorial integrity?

Because the words you read in *Computerworld* often have a dramatic impact on your business, your career, and your future:

You use this information to evaluate new products. To get a candid view of emerging technologies. To find out the inside story on corporate strategies. To decide whether to jump ship or stay in your current job. To get the edge on your competition.

In short, *Computerworld* is filled with the words IS professionals like you live by.

WORDS YOU WORK BY.

Week in and week out, our editors and reporters call it the way they see it — on issues ranging from network management to reengineering. They dig deeply to bring you the most accurate, comprehensive news in IS.

It's no wonder over 139,000 IS professionals pay to subscribe to *Computerworld* every week. Shouldn't you? Order today and you'll receive 51 information-packed issues. Plus, you'll get our special bonus publication, *The Premier 100*, an annual profile of the leading companies using IS technology.

Call us toll-free at 1-800-343-6474. Or use the postage-paid subscription card bound into this issue.

You'll get the kind of straightforward, impartial reporting you can work by. You have our word on it.

COMPUTERWORLD



The COMPUTERWORLD Comedy Store

"Oops - I forgot to log off again."

One-size fits all. 50/50 blend, cotton/polyester T-shirt. Short-sleeved. Made in U.S.A.



**"Don't panic!
Just push the
escape key."**
White ceramic 10 oz mug

**"Don't panic!
Just push the
escape key."**

Durable and roomy.
16" x 19" black cotton
canvas duffle bag -
includes sturdy
webbed straps and
zipper. Made in U.S.A.



**"What's the digital
bathroom scale
doing in my
laptop case?"**

Roomy 100% natural cotton
canvas with webbed straps, 14" x 9"

**"What's the digital
bathroom scale
doing in my
laptop case?"**

32 oz. Sp.-t Bottle with insulator



**"There! There!
I swear, it just
moved again!"**
Mousepad, 8" x 7 1/2"



The COMPUTERWORLD Comedy Store To order: Fax 508-626-8258 or Call 1-800-222-7545.

Item	Price	Quantity	Amount
C1AD01 Mug	\$7.99		
C2AD01 Slip-It	\$7.99		
C3AD03 Mousepad	\$7.99		
C4AD01 T-shirt	\$15.99		
C5AD01 Sweatshirt	\$24.99		
C6AD03 Duffle	\$16.99		
C7AD01 Tote Bag	\$12.99		

AVOID DELAY! Please include Shipping & Handling.
For orders over \$100.00, add 5% shipping and handling.
UP TO \$100.00 \$10.00 \$3.95
\$101.01 - \$200.00 \$10.00 \$4.95
\$201.01 - \$300.00 \$10.00 \$5.95
\$301.01 - \$400.00 \$10.00 \$6.95
OVER \$400.00 \$10.00 \$7.95
* Add 5% per item for Shipping and Handling.

MAIL TO: **COMPUTERWORLD**

P.O. Box 9171
Framingham, MA 01701 U.S.A.
Attn: Product Fulfillment
(Monday - Friday 8:30-5:30 EST)

SHIP TO:

Name _____

Company _____

Address (Please use street address, UPS does not deliver to P.O. Box) _____

City _____ State/Prov. _____ Zip/Postal Code _____

Country _____

Daytime Phone _____

Method of Payment (in U.S. orders only)

Check or Money order payable to: COMPUTERWORLD

VISA

MC

AMEX

Card No. _____

Exp. Date _____

Signature _____

Your credit card will not be charged until your items are shipped

Thank you for your order!

COMPUTERWORLD

The Newspaper of 5

*Residents of MA, CA, HI, GA and DC, add applicable sales tax. Canada residents add 8.5%.

Move your career to the top ...

Colorado

The idyllic setting... Denver and "The Gem of The Rockies" - Colorado Springs, are perfect for IT professionals, offering numerous jobs, low taxes, affordable real estate, good schools, and a variety of recreational activities.

... for the right opportunity. Due to our dynamic growth in serving Fortune 500 clients of Colorado, The Registry, Inc., a national information technology consulting firm, has several exciting opportunities for software professionals with 5+ years experience in the following areas:

- UNIX, C (Sybase or C++) • OS/2, PM, C or C++
- COBOL, CICS, DB2
- Smalltalk, C

In addition to an attractive salary and extensive benefits package, The Registry has real estate and business alliances available to assist with your next relocation.

Mail your resume to:
The Registry, Inc.
 Attn: HR/CW
 303 S. 17th Ave.
 Denver, CO 80203
 Phone: 800-694-9119

Other Midwest Opportunities:

- Clipper
 - SAS
 - COBOL / DB2
 - OS/2 C Programmers
- Contact: Mike Foley
 Fax: 1-617-527-9805

Atlanta GA
 Boston MA
 Charlotte NC

Chicago IL
 Cleveland OH
 Dallas TX

Denver CO
 Duluth MN
 Milwaukee WI

Gainesville FL
 McLean VA
 Newton MA

New York NY
 Philadelphia PA
 Newark NJ

Parsippany NJ
 San Francisco CA
 Somersbury NJ

SSI's Growth is Explosive [New branches are opening]

SSI's TOTAL commitment to "Customer Experience Satisfaction" is making the difference with over 35 percent growth in the last year.

SSI's Customers have many more challenges than include over 100 career opportunities in Indianapolis, Cincinnati, Louisville, Kansas City, and Phoenix branch offices with one or more of the following disciplines:

- Excellent Analyst/Programmers with SABIS, Business Applications (SABIS, IDMS, DB2, IMS)
- Relational Database Technologies (Sybase, ORACLE, Informix, MS-ACCESS)
- Business Process Re-engineers (ADW)
- Mainframe & Client Server Experts
- Managers of Outsource Projects
- Graphical User Interface Experts (Powerbuilder, Object View, Gupta, etc.)

SSI is growing due to continuous employee participation, excellent benefits, and competitive compensation packages. Developments will be based on a career based upon your performance - join a vibrant, aggressive team on the road to success! CALL or RUSH your resume to:

Richard Czech,
 Human Resources
 Software Energy, Inc.
 P.O. Box 50000
 Indianapolis, IN 46250-0025
 FAX (317) 576-6831

SSI

Systems Engineer

Sun Microsystems Computer Corporation is seeking a Technical Marketing professional to provide technical support to the Field Sales organization and Sun's customer base. Requirements include:

- Strong account management skills
- Sales experience
- Sun/Solaris experience
- Strong presentation skills
- Networking/distribution background
- College degree or equivalent technical experience

Current positions available in:

Baltimore	Minneapolis
Denver	Baltimore, MD
Stamford, CT	Washington, D.C.
Chicago	Florida (Orlando)
Detroit	Tallahassee
New York City	Jacksonville, FL
Houston	Portland, OR
Dallas	Tampa
Virginia, VA	New Jersey
Arlington, VA	Mountain View, CA
Boston	Seattle, WA

If you are self motivated, possess a high energy level, strong academic record and an entrepreneurial spirit, Sun would like to discuss an exceptional career opportunity with you.

Sun Microsystems Computer Corporation offers a competitive salary and benefits. To apply, mail resume to Sun Microsystems, Attn: Staffings, Dept. EPR, Two Pierce Place, Suite 1990, Santa Clara, CA 95051, sunmicrosystems.com/sunjobs. An Equal Opportunity/Affirmative Action Employer



Sun Microsystems Computer Corporation

Sun Microsystems, Sun Microsystems Computer Corporation, and the Sun logo are trademarks of Sun Microsystems, Inc. All other products in current news are trademarks or registered trademarks of their respective owners.

Best Technology

Easy To Use

We don't believe in tradeoffs.

That's probably why in a recent Brand Preference Survey, **Computerworld** readers chose Micro Focus COBOL Workbench as the top leader in the Best Technology and Easy to Use categories. At Micro Focus, we create the most open development environments that meet the most demanding technical challenges without sacrificing usability.

It takes special people to turn technology into solutions. If you're technically savvy and customer driven, consider the following opportunity in Los Angeles CA, King of Prussia, PA, or the Washington, DC area.

□ Senior Systems Engineers

You will provide pre- and/or post sales support of Micro Focus products, primarily at our customer sites. Additionally you'll present products, demonstrate code, prepare presentations, and present product features and benefits of various company development solutions and User Group meetings. Regional travel is required.

Along with a BS or equivalent, you need 5+ years in IBM COBOL applications development including on-line development under CICS, and excellent verbal and presentation skills. Experience with UNIX, SQL, OS/2, Windows or PC LANs is required, a background using Micro Focus products preferred.

For immediate consideration, please forward your resume to our Micro Focus Technical Services or Micro Focus Asia, Professional Staffing, 2445 East Telegraph Rd, Palo Alto, CA 94303, FAX 415-496-7248, Internet: clerk@mfsl.co.uk; EOE M/F/D/V. Principals only. MFSL is a registered trademark of VNX System Laboratories.

MICRO FOCUS

RO-STAR - Salt Lake City, UT

As One of the West's premier IS Consulting Service firms, We Offer:

- Career Growth - Excellent Compensation - Excellent Perks
- Outstanding Initiatives - The Challenge of Mobility
- Fortune 500 Clients - Outstanding "Quality of Life"
- A Stable and Secure Future - Outstanding Benefits

Needed: COBOL, CICS, TSO, VSAM, IDMS/ADW, IMS or DB2; for major development!

Other: CO/VS2 (Powerbuilder, VisualBasic), Adabas, DB2, Oracle, SAP, CASE, RPG/THINH, Progress, Oracle Tools, Lotus Notes, Informix, Clipper

PRODATA

4800 1/2 Marathon
 Suite 1000
 Portland, OR 97221
 PH: 503 223 57716
 FAX: 503 223 7716

PRO-STAR

1100 E. 4600 S.
 Salt Lake City, UT 84107
 PH: 801 467-6126
 FAX: 801 464-0893

This Space for HIRE!
 CALL:

800-343-6474

in MA.,
 508-879-0000,
 ask for
 John Corrigan,
 Vice President
 Classified
 Advertising.

COMPUTERWORLD

Weekly.
 Regional.
 National.

And it Works!

OBJECT Lesson

OLE and OpenDoc are battling for developers' mind share. So which deserves more attention?

By Brynwyn Fryer

Despite the call to jump on the object-oriented bandwagon, developers facing the transition to object-oriented programming may be in a quandary when it comes to choosing whose specification to follow.

Microsoft Corp. currently owns the market for object-oriented application development through its Object Linking and Embedding (OLE) architecture. According to X/Open Co. in Menlo Park, Calif., nearly one-third of corporate information systems departments surveyed plan to commit to OLE this year, joining the millions of workers who already use OLE to integrate information

by linking applications such as Excel and Word. OLE is also available in other Microsoft applications, including PowerPoint, Access and, later this year, Mail.

OpenDoc, a more recent contender, is following hard on Microsoft's heels. Developed by Component Integration Laboratories in San Francisco and currently entering its beta release, OpenDoc offers a robust alternative for object-oriented developers, many analysts say.

For example, Jack Gold, senior research analyst at Meta Group, Inc. in Westport, Conn., asserts that OpenDoc has been built correctly from the ground up. "Microsoft had to retrofit the OLE 2.0 architecture around their existing OLE architecture just like Windows had to be retrofitted around DOS," Gold says.

Building blocks

However, OpenDoc is built upon accepted industry standards such as the Object Management Group's Common Object Request Broker Architecture. Gold says, "Whenever you have a broad specification like that for a foundation, you're bound to have a superior architecture."

Another key to OpenDoc's technical superiority, Gold says, is that it allows inheritance — following a vertical linking structure — among objects, rather than aggregations, or a flat linking structure.

Conversely, an object-oriented architecture that lets developers set up inheritance offers the potential for more complex applications, OpenDoc proponents claim.

"OpenDoc is truly object-based, where OLE is really a function call redirection system with the name 'object' attached."

says David Pollak, president of Athena Design, Inc., a Boston-based spread-sheet development company that bases its products on OpenDoc.

At the same time, Pollak says, the API base of OpenDoc is already "dramatically" and much easier to work with than OLE. "OLE is very complex to program," says Bill Cornfield, president of the Windows Support Group, a client/server consulting firm in New York.

Easier on developers

In fact, CI Lab claims OpenDoc applications require developers to provide one interface and 50 functions, while the same application in OLE requires 13 interfaces and 126 functions. OLE "requires deep expertise and concentrated learning. The reference manual alone is two volumes," Cornfield says.

Choosing between the two object-oriented architectures may seem difficult from current perspectives, but the fact that there is an alternative to OLE is ultimately healthy, analysts say. "There's not going to be a single winner in this battle," Gold says. "There will be two alternatives."

The key, say advocates on both sides, will be the availability of third-party tools that ease development in both OLE 2.0 and OpenDoc.

"Microsoft is trying to build OLE-aware controls into Visual Basic, and WordPerfect has introduced a tool called SOLE [Seamless OLE] to provide an environment where one component can work both in OLE and OpenDoc," Gold says. "Whoever makes life easier for developers to work in will win."

TWICE THE CLASS TIME

How difficult is it to learn OLE and OpenDoc? "OLE is very complex," says David Pollak, president of Athena Design. If it takes four hours to develop a single function in OpenDoc, it would take days to write the same function in OLE, Pollak estimates.

Microsoft argues that OLE 2.0 is the basis for Cairo and more complete than an OpenDoc specification, which is aimed only at creating compound documents. Yet OLE proponents expect the current learning curve to be significantly diminished with the upcoming release of OLE 3.0.

Despite the difficulties of working with OLE, most Microsoft-centric shops will stick with it. "OpenDoc is much easier to work with, and if we were an OLE shop, the decision to go with OpenDoc would be a piece of cake," says Alex Kalpaxis, vice president of client/server engineering at Basler's Trust in New York. His firm develops financial and trading applications in OLE. Adds Pollak: "If you're in the Microsoft camp, that's all there is."

To date, comparatively few firms have called CI Lab for a copy of OpenDoc, and analysts predict it will be at least three to six months before programmers can readily receive OpenDoc training.

—Brynn Fryer

Fryer is a free-lance writer in Boulder Creek, Calif.

CONSULTING & FULL TIME POSITIONS

DCI is a FREE resume job service, providing you with opportunities in the computer and information industries. We offer direct placement and full-time positions. Call or write DCI, 1000 N.W. 10th Street, Suite 1000, Fort Lauderdale, FL 33309. It's a toll-free number. It's a quick way to get your resume out.

Microsoft Corp. currently owns the market for object-oriented application development through its Object Linking and Embedding (OLE) architecture. According to X/Open Co. in Menlo Park, Calif., nearly one-third of corporate information systems departments surveyed plan to commit to OLE this year, joining the millions of workers who already use OLE to integrate information

Information Technology Specialists

SDC is a leading supplier of midlevel and senior Information Systems personnel. We have over 200 national openings for persons with a minimum of 2 years experience.

Skills:
PowerBuilder
VisualBasic
Oracle
DB2
Informix
Sybase
MS SQL
MVS/TSO
Novell, TCP/IP
Faxpro

SDC Computer Services, Inc.
National Computer Center, Department DGC -
P.O. Box 9067, Williston, NY 12095-9067
(800) 588-8210 (716) 333-7985 fax

SDC

SDC is a leading supplier of midlevel and senior Information Systems personnel. We have over 200 national openings for persons with a minimum of 2 years experience.

Skills:
C, C++
Unix
Athena
Windows
DOS
DB2
MVS/TSO
Novell, TCP/IP
Faxpro

SDC Computer Services, Inc.
National Computer Center, Department DGC -
P.O. Box 9067, Williston, NY 12095-9067
(800) 588-8210 (716) 333-7985 fax

INFORMATION & INDUSTRY

As a trusted recruiting resource since 1985, our Software Vendor Management Consulting, and End User Client teams have assisted us in identifying IT professionals to the \$50K-\$175K compensation range for rewarding permanent opportunities nationwide.

Software Vendor Consultants
• App Dev/Design • OLE/ClientServer
• Database • LAN/WAN • Project Mgt.
VP/Sales • HR Manager • Technical Sales

End User Consultants
• 157+ SAP • ORACLE • Financials
• Manufacturing • MIS • DB2 • COBOL
• Mainframe • CICS • DB2 • COBOL
• C/C++ • UNIX • COBOL • Web
• Windows • UNIX • OS/2 • NT

Software Developers

Positions required in regular:
FAX 703/352-4700

2010 Corporate Drive Suite 100
McLean, VA 22102
<http://www.informationindustry.com>

Information Industry Inc.
Information Industry Inc.
Information Industry Inc.

Due to expansion, a No. CA based pioneer in maintenance software is seeking a highly confidential leader with progressive technical and management skills to oversee the growth of our software division. The ideal candidate must possess:

- Experience in Software Engineering Environment (SCE) with a common development methodology, management, planned for multiple platforms, Intel, UNIX, AS/400, and VME.
- Strong technical background in design, development and oversee the on-line, off-line compilation of MVS programs.
- Knowledge of MVS architecture and programming techniques.
- Experience in MVS architecture technology (Our team of developers are in multiple locations.)

Requirements include product design, embedding quality into the design test, and integration processes. The ideal candidate must be a self-starter, able to learn and coding under MVS applications required, prior using CASE tools, Object Oriented design, other advanced methodologies.

A general knowledge, solid management skills, and technical background in MVS architecture is required. The ideal candidate: Send resume and salary history to Jim Johnson, President, 1000 E. 10th Street, Suite 1000, Santa Clara, CA 95051 or FAX them to 408/259-9999 EOE.

CONSULTANTS SHOULD CONSULT

MIMI

IMMEDIATE CONTRACTS

Immigration Attorney

Immigration Lawyer

**To grow your company,
just add water.**

Come to Clearwater, Florida this fall for the IT event of the year - the NACCB conference. For anyone in the Technology Consulting business, this is an invaluable opportunity to keep abreast of what's happening in our industry. Aside from numerous networking opportunities, our agenda will keep you informed on such topics as

- Industry Sales Techniques
 - New Recruitment Methods
 - Company Growth Strategies

**NACCB CONFERENCE
OCTOBER 12-16, 1994**

Clearwater, Florida

For more information call (800) 848-1680

NACCB National Association of
Computer Consultant Businesses

DATA AID INC

2025 RELEASE UNDER E.O. 14176

Join our growing team of professionals in Birmingham, Atlanta and surrounding cities. We want you if you have experience in the following:

- | | |
|---------------------|------------------|
| • NOMAD | • GUPTA |
| • MVS | • PORTRAIN |
| • TURBO/P | • DBC |
| • ALL-IN-ONE | • VAX |
| • UNIX, C, C++ | • CONOL, MM DBDC |
| • JD EDWARDS/AS/400 | • PEOPLESOFT/DB2 |

Send resume and benefits. Send resume to:

800-987-9878
205-987-9878
Fax: 205-987-1814

**ANOTHER
REASON WHY
COMPUTERWORLD
RECRUITMENT
ADVERTISING WORKS ...**

For over two decades, Computerworld has delivered qualified job candidates to America's employers.

And ever since Computerworld's first weekly issue in 1967, America's companies have relied on Computerworld to target America's most qualified computer job candidates.

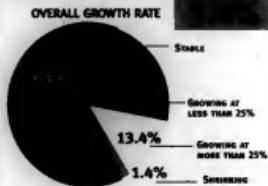
To place your ad regionally or nationally, call John Corrigan, Vice President/Classified Advertising, at 800/343-6474 (in MA, 508/879-0700).

COMPUTERWORLD

Where the qualified candidates look. Every week.

CAREER SURVEY: Subassemblies & Components

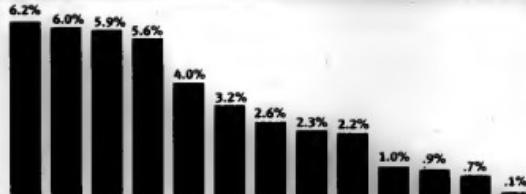
INTERVIEW WITH THE AUTHOR



REVIEWED BY *John R. M. Thompson*

Copyright 1994, Corporate Technology Information Services, Inc., Woburn, Mass.

RETINAL GROWTH ANALYSIS



CORPTECH, A DIRECTORY PUBLISHER IN WOBURN, MASS., TRACKS THE U.S. 35,000 TECHNOLOGY MANUFACTURERS. THIS SURVEY RELATES TO THE 27,977 TRACKED FIRMS WITH FEWER THAN 1,000 EMPLOYEES.

Marketplace

Loosening the remote apron strings

Corporate IS
departments wield
cautious control when
allowing remote sites
to buy their own
networking products

Computing power may be getting more distributed, but there's little question about who's in charge of network purchases for remote sites. The corporate information systems department lays out the law of the LAN.

"We can't afford our remote sites much freedom when it comes to purchasing network-related products," says Patrick Zilfitt, vice president of corporate information technology at Gillette Co. in Boston. A global organization with offices in 76 countries, Gillette has built an information technology infrastructure based on common approaches and consistency.

All comes back to that vision thing. Without careful planning and coordination, a network is only as reliable as its weakest link. Additionally, the trend in corporate IS to take control of networking purchases is driven by a desire to ensure common systems companywide.

However, corporate IS understands the importance of being reasonable in its authority and democratic in its decision-making. That means companies such as

Gillette are combining decentralized decision-making, as it relates to the needs of its decentralized businesses, with centralized control, as it relates to the organization's global business environment.

With input from key IS people representing the company's various business interests, a Gillette advisory board makes information technology policy decisions on items such as networking protocols, end-user clients, LAN operating systems and software, routers, bridges and private branch exchanges, for example.

IS also recognizes that it can't be all things to all sites. Therefore, at many companies it maintains a give-and-take relationship with its remote offices.

"The more corporate IS allows groups within the organization to make their own decisions and have some autonomy over their investments, the more invested they'll be in the systems," says Jeffrey Kaplan, director of Dataquest, Inc.'s Worldwide Services Group in Birmingham, Mass. In this scenario, as long as the remote facilities select products from vendors on the corporate shopping list, they're on their own.

By Lynn Huber

Moreover, according to a recent Dataquest survey of Fortune 1,000 businesses and government agencies on IS spending for system integration-type projects, which included networking, corporate IS is responsible for 50% of all budget spending. Functional departments or remote offices spend the remaining 50%.

Delegating responsibility

If the sites are international, additional savvy is required. J. D. Walther, IS manager at OPI International, Inc. in Houston, specifies purchases for all critical equipment for the company's LANs, such as servers, tape backup units, uninterruptible power supplies, LAN operating systems and printers. He also selects someone at each remote location to assume responsibility for the company's vendor relationship.

"Not only does this approach give [them] breathing room, but it helps the company establish closer ties with the remote vendor," Walther says.

The marine construction firm currently has remote sites in Bahrain, Nigeria, Singapore and Texas and an installation under way in Mexico. By taking a proactive approach to setting information technology policy, Walther says, the company has reliable and stable networks with few problems.

While most organizations understand the benefits of central IS decision-making, there are times when remote facilities are given the green light to make in-

dependent network purchases. "Remote offices that generate their own profit and loss or are financially independent business units often have independent decision-making powers," says Jeff Bruckner, managing director at the DMW Group in Montvale, N.J.

Even in circumstances where remote offices don't have the freedom to shop as they please, it's not uncommon for remote site managers to identify their requirements and initiate contact with corporate IS. Working collaboratively with remote sites is in the interest of both parties, Zilfitt says. "Never create a situation where corporate becomes the ivory tower and is not considered a business partner," he stresses.

The physical distance between corporate IS and its remote managers has the potential to create a divide between the

Split decision

According to a Dataquest survey of Fortune 1,000 businesses and government agencies, corporate IS is responsible for 50% of the spending on integration-type projects, which include networking. The other half is spent by functional departments or remote offices.

two, but good communication combined with a common understanding of the business objectives and relation to the IS infrastructure can go a long way in creating a manageable relationship all around.

Haber is a free-lance writer in Boston.

Coming September 5th... Marketplace Information Center!

It's the unique, new service designed to help Computerworld Marketplace readers - key users and buyers of information technology - get important product/service information - fast.

It's User Friendly!

All you have to do is call the toll-free number and request the appropriate extension listed in the product/service directory and above the corresponding advertisement. The Marketplace Information Center does the rest.

And It's Opening Soon!

Starting September 5, the new Marketplace Information Center will be up and running 12 hours a day, five days a week. It's our way of helping you get all the product/service information you need - when you need it!

Look for the Toll-free Number - Then Give Us a Call. Trained Specialists Will Be Standing by...Waiting To Help YOU!

New Products - Hardware - Software

Data Compression

The world's most popular data compression comes to MVS!

PKZIP™

PC remote backup anywhere, anytime. Your best defense against viruses. A system of computerized storage & automatic retrieval, ALL IN ONE.

SafeNet

PC remote backup anywhere, anytime. Your best defense against viruses. A system of computerized storage & automatic retrieval, ALL IN ONE.

Guaranteed delivery of our data vault Pay for 11 months in advance month of FREE SERV
1-800-833-1000
 Daily - \$20.00

SAFESITE
 National Business Records Management

Information Management

LAN OFFSITE BACKUP SAFENET

Computer Tape Backup, Highly Secure Offsite Storage, Disciplined Automatic Rotation and Retrieval, ALL IN ONE

SafeNet

PC remote backup anywhere, anytime. Your best defense against viruses. A system of computerized storage & automatic retrieval, ALL IN ONE.

Guaranteed delivery of our data vault Pay for 11 months in advance month of FREE SERV
1-800-833-1000
 Daily - \$20.00

SAFESITE
 National Business Records Management

Computer Presentations

Bright color. Bright price.
\$2,299.

The BOXLIGHT 1280 ColorShow Special.

SPECIAL OFFER!

The BOXLIGHT 1280 True Color Projection Panel. At \$300 off, it's an unbeatable value.

- Brightest image
- Compact & portable
- PC & Mac
- FREE remote & cable

BOXLIGHT: Your direct source for all the bright answers.

No one else offers the same shipping & selection... the value... the same direct delivery... the knowledgeable service and support you get from the projection panel experts.

BOXLIGHT®

Stacking Frames

A vertical solution to a horizontal problem...



CSF-174 2Hi
 34" W x 22" D x 49" H
CSF-174-3Hi
 34" W x 22" D x 59" H

Save valuable floor space. Perfect for servers or controllers. Adjustable shelves for complete versatility. Choose from a variety of options. Ready for immediate UPS shipment. Call now for more information

DATA CONNECTIONS

Pedment Center P.O. Box 11160, High Point, NC 27265
 910-854-2801 Fax 910-854-6211
1-800-225-1855

YOUR COMPLETE SOURCE FOR STACKING SOLUTIONS

Enterprise Software

YOUR ENTERPRISE COMPUTING ENVIRONMENT... MORE THAN ONE INSTRUMENT

CONDUCT IT THAT WAY!
 WITH

Structure
 for Information Systems Architecture
1-800-890-0902

WINDOWS SOFTWARE FOR
 U.S. PROFESSIONALS

- Framework
- Software
- Environment

Computer Presentations

Power Tools for the Power Presenter

One stop shop for all major brands



COLOR from \$1,795

For the latest in color projection panels and projectors call the experts in LCD technology. Your satisfaction guaranteed or your money back. Quick delivery via Fed-X or UPS.

Call for CATALOG 1 800 726 3599

Boxlight

101 The Embarcadero Ste. 100-A, San Francisco, CA 94105
 Hours: 8:30 to 5:30 PST, 9:30 to 8:30 EST
 VOICE: 415 772 5800 FAX: 415 985 3817

Buy / Sell / Lease

Large Systems Computers & Peripherals

New & Used

IBM

- ES/9000
- SERIES/1
- AS/400
- RS/6000
- SYSTEM/88
- Point Of Sale
- ...and more!

Buy • Sell • Rent • Lease

SPECTRA
(800) 745-1233
(714) 970-7000 • (714) 970-7086 Fax

Anaheim Corporate Center
5101 E. La Palma Ave., Second Floor
Anaheim, CA 92807

Large Systems Computers & Peripherals

All Computers
All Peripherals
All Upgrades

BUY • SELL • RENT • LEASE

- Amdahl
- IBM: RS/6000 • AS/400 • Mainframe
- Cisco
- Concurrent
- Data General
- Digital Equipment
- EMC
- Hewlett-Packard
- Hitachi
- Memorex-Telex
- NCR
- Prime
- Sequent
- Silicon Graphics
- Stratus
- Sun
- Tandem
- Unisys
- Wyse
- Xerox
- Point of Sale and more...

Call Today! (800) 729-3280

Buy / Sell / Lease

IBM Systems • Peripherals • Parts & Service

- | | |
|---------------------|---|
| NEW & USED IN STOCK | <ul style="list-style-type: none"> • RISC System/6000 • Workstations • Parts & Features • AS/400e • Novell Networking • Sun & Dec • Personal Computers • Data Communications • UPS Systems • Peripherals & Upgrades • System 36 Conversions • AutoCad |
|---------------------|---|

COMPUTER MARKETPLACE 800-858-1144
TEL (909) 735-2102 • FAX (909) 735-5717
1499 Railroad Street • Corona, CA 91720

Buy / Sell / Lease

and we
sell it
too!

HP 9000
Data General
RS/6000
Data Products
PC's Workstation
(617) 982-9

America's Inc.

Systems & Service

**Dempsey: Where IBM® Quality
Is Second Nature!**

- RS/6000
- AS/400
- SERIES/1
- ES/9000
- PS/2 & VP

Dempsey
BUSINESS SYSTEMS

18077 Beach Blvd., Suite 333 • Huntington Beach, CA 92648
(714) 847-8486 • Fax (714) 847-3149

- Sales & Rentals**
- Processors
 - Peripherals
 - Upgrades

IBM
Authorized
Reseller
Integrator

(800) 888-2000

Please Meet...Arthur Kurek and Lorraine Drake, Outsourcers and Remote Computing Providers.



Arthur Kurek
President
Lorraine Drake
Executive Vice President
ALICOMP, INC.
Manhattan, NY/Caucus, NJ

Hundreds of IS Buyers
Already Have...Thanks to
Computerworld Marketplace.

Used Equipment

FOR SALE

USED IBM COMPUTER EQUIPMENT
8121-180 Processor • 3345 DASD
Controllers • Printers
and other equipment

For copy of bid document contact:
Elmer Simard,
(907) 265-2474

ALASKA RAILROAD
CORPORATION



What's the best-read
newspaper
among IT Professionals?

Simplex says...
Computerworld. Again.

Call for Complete Detailed

Computerworld
Marketplace
Call 1-800-343-8474,
ext 744



COMPUTERWORLD'S

"5th Wave" Cartoon Mouse Pad
COMPUTERWORLD brings humor to a
mouse pad featuring a new cartoon from
"The 5th Wave" series by Rich Tennant.
Not available in stores, this colorful foam-
backed pad will keep your mouse clean
and protect your desktop.

Best of all, it's only \$7.99*. Send your
name, address and check or money order to **COMPUTERWORLD**, P.O. Box
9171, Framingham, MA 01701, Attn: Product Fulfillment. For credit card
orders, call 1-800-343-6474.

*In U.S.; for each unit ordered, add \$1.25 for postage and handling; orders outside U.S. add \$5.00 each.
Resenters of MA, CA, GA, NJ, and DC add applicable sales tax. Canadian residents add G.S.T.

The Business Charter. Marketing itself as "The Boutique of the Computer Services World" and operating on a platform of excellence, ALICOMP, INC. focuses on providing personalized outsourcing and remote computing services to domestic and international clients with specific IBM mainframe needs.

The Target Audience. "Given the horizontal nature of our services, ideal targets are IS managers in computer offices in core industries such as automotive development, financial and legal services, publishing, health care, consumer products, and the national/international non-profit sector. Largely, we're targeting IBM mainframe organizations which fit our comprehensive technical profiles."

The Advertising Vehicle. "As the 'Bible' for the computer industry, Computerworld is read by more of our targets than any other publication. The Computerworld Marketplace offers the best and most cost-effective place for building name recognition for ALICOMP and promoting our ongoing partnership with CBS. Our value-added relationship with Computerworld Marketplace also helps maximize our visibility through directory listings, database leads, and more."

The Results. Bottom Line. "Computerworld Marketplace advertising definitely gets the right companies to call. We consistently receive top-quality leads and typically convert over 10% into sales contracts. So we know the ALICOMP name is being seen by our profile companies. With 14 years in the business, we've tested our share of advertising sources, and there's no comparison. Clearly, Computerworld Marketplace is the place to advertise. For over two years now, running an exclusive schedule in Computerworld Marketplace every week has proven to be one of the best ways to maximize ALICOMP's business potential."

COMPUTERWORLD Marketplace

Where Buyers Meet Sellers - Every Week
1-800-343-6474, ext. 744

Get Instant Access to - Computerworld Introducing CW Online

Computerworld introduces CW Online, a comprehensive, fully searchable library of Computerworld articles. With CW Online, you can search the three most recent years of Computerworld issues. And the service is updated weekly, so you can access new information every week. Research has never been so easy, so complete or so economical. Right from your personal computer.

The Online start-up kit costs just \$25.00 and includes everything you need to start using CW Online including easy-to-use communications software. After that, you'll be charged for access time along with a \$5.00 monthly account service fee. You can even set your account up for us to bill your credit card or invoice your company on a monthly basis.

Call today to enter your subscription to CW Online and to receive your CW Online start-up kit with valuable communication software.



Electronic access to a library of Computerworld articles

For more information or to order call
800-343-6474 x81-493 today.

Looking for...

...Application development tools from an experienced developer?

The AD Toolbox has just what you're looking for ...flexible, portable, and maintainable tools for your environment/platform. Simply locate the developers providing your solutions - and give them a call.

And, if you're a developer with solutions to sell,
call 800/343-6474, ext 744

Then watch the AD Toolbox go to work - for you!

APPLICATION DEVELOPER'S TOOLBOX

WINDOWS IMAGING



MS-DOS

**ROYALTY-FREE
DOS Extender!**

From a Windows Interator, all in one product for the same price!

Why pay for DOS programming when one will do? BLINKER 3.0 features a fully-integrated DOS extender to directly access up to 16MB of extended memory, the world's fastest Windows Interator and the fastest dynamic overlay loader to automatically design and manage overlays within 640KB. You can even run multiple programs simultaneously in the same protected mode or real mode, depending on the runtime machine's resources. Compatible with B, C++, CA-Cipher, FORTNITE, Assembler, etc. BLINKER saves hours of valuable programming time.

- No royalty fees - no license fees - no royalties - no support fees - no extra costs - FREE source code available on request! Blinkee!
- Call Now 804-747-6700 or FAX to 804-747-6700

NEWSLETTERS

WINDOWS COBOL TDOLs

COBOL for the 21st Century

Maintain your COBOL applications with the advanced features of the most sophisticated enhancement tools for COBOL development, including:

- Graphical User Interface (Windows and Windows NT)
- Fast compile times — fastest among leading COBOLs
- Portability across over 600 platforms
- Fully integrated development tools

Take your organization into the 21st century. Call Account Manager at 800-COBOL-85 or 813-689-7228. Or write us at 616-689-6700.

acucobol inc

WINDOWS

**Windows 95
Makes Windows
F-A-S-T!**

How Fast? Well, how about 40 TIMES faster than other Windows versions. That's SPEED. And it's the most reliable, most popular software package, including FastDisk-FFT, 4 Clipper/NTX-DOS Encryption, Query-Optimization and our very hot Brown-Green and Data-Ware VME converters and you've got the most advanced Windows documents engine around!

Now Only \$149
(Or Buy Microsoft Windows 95)
(800) 683-1657
(905) 699-9657
240 699-9657
Successors 800-747-6700

IMAGING developer toolkit

What the experts say...

"...we used this tool-set regularly, and consider it simply the best." - Jim Tuckett, Imaging Magazines, Inc.

"We chose LEADS' Visual and C++ component toolkit over other similar products because of its ease of use and great performance." - Al Mirell, Computer Masters and Digi-Data Corp.

"...great component software along the lines of the best...the best of other high-compression algorithms..." - PC Magazine, March 1994

LEADS' Imaging Toolkit is a complete development kit including Corel PaintShop, Kodak Stereo and Viewtex LEADTOOLS for the Macintosh, Windows and OS/2. Call for complete information.
30-day risk-free trial - Price includes ship!
1-800-673-4699
Fax: 303-696-1218
Email: LEADS@COMCAST.COM



DATA BASE DESIGN

Each month "Devourer" brings you 64 pages of news, reviews, and articles on the latest developments in databases, languages, technologies, and other areas of interest to database professionals.

DATA PROGRAMMER

Assessing, refining, and maintaining application development tools and methodologies! Cut through the market noise and learn what's important in today's application development environment. **Computer Application Development Workshop**

ACM PERSONAL PROGRAMMER

Described as "the Harvey's Business Review of the software industry," ACM Personal Programmer was held in Boston. It is the largest of industry leaders on peopleware, tools, reengineering, COTS, software quality, productivity, and more.

For FREE sample issue:
Call: Information Corp.
1-800-227-1000, Ext. 100
Fax: 303-696-6710
Email: PAK@COMCAST.COM

PDW/POWERBUILDER

PowerBuilder™
Server Data Workstation
for Data and Application Integration
with Oracle, Sybase, Informix, DB2, and ODBC.
Create distributed client/server environments
and maintain an enterprise-wide distributed base
Advanced features include: distributed integration
with multiple databases, distributed transaction processing,
multiple users, and multiple clients, and multiple servers.

Integrate PowerBuilder applications with other
PowerBuilder applications via distributed data sharing
and distributed transaction processing.

Complete system level test cases, test plans, and test
scripts for distributed environments.

Application Development...
Critical software technologies, including products
that enhance the performance of existing systems
and products that are primary drivers to
future growth. With the introduction of the
Windows 3.1 environment, Windows-based
products have proliferated. Companies that
have developed products for the Windows
environment have found opportunities to develop
new products for designing, developing, and
supporting distributed applications for today's
dynamic environments.

PROGRAMMING HURDLES Getting You Down?

You've Turned to
the Right Place!

**The New Application
Developer's Toolbox**

OBJECT ORIENTED

Learn C++ & Windows-Based Programming... Simply, Quickly!

With the OML Learning Series™ you can learn C, Visual C++, object technology and Windows programming quickly and conveniently in the privacy of your home or office. The OML Learning Series features:

Visual Series™, C/C++ Series™, OOA/OOD Series™, OLE Series™

Each series:
Any 1 series: \$199
Any 2 series: \$299
Any 3 series: \$499
All 4 series: \$699
Lab Manual: \$199
Contact your distributor:

Call us for information and FREE Demo Software.
800-6789-OML

Ask about our new net.LAB package



POWERBUILDER TOOLS



Specialists from Greenbreath & Rennel bring you the best in application development tools with a commitment to quality. Many differing over 100 thousand objects and functions, Objectivity is the most powerful and fast tool set for the most difficult of lightning speed needs. It has the ability to think ahead of your application needs and build a system that matches them.

With Objectivity, you can have a committed development team. This means the implementation of an application and application maintenance and development. Objectivity is built with an application perspective to build a system NO application.

Created by Greenbreath & Rennel recognized leaders with extensive experience, Objectivity is a complete PowerBuilder object-oriented tool with an application perspective to build a system NO application.

Any questions?
Manager Call 800-623-6627
Sales Call 800-623-6627
Technical Support Call 800-623-6627

Objectivity
From Greenbreath & Rennel, Inc.

MS-DOS

Lahey

FORTRAN
New! 32-Bit Fortran 90

FORTRAN 77 Professional and Student Versions

New Code & Downzoring

Complete Suite of Tools

Free Technical Support

A Decade of PC Fortran!
(800) 549-4778 or (702) 531-2500

Fax: (702) 531-5123

SECURITY

Protect Your Software and Revenues

Stop piracy - increase revenues. Sentele's Call is today for your Security Developer's Kit.

Sentele 800-852-8569

Ramboor Technologies, Inc.

1-800-744-1557



yes

UnixWare®



UnixWare®

Editorial Index

Companies in this issue

Page number refers to page on which story begins.

ACTUAL SIZE.

© and Motorola are trademarks of Motorola, Inc. © 1994 Motorola, Inc.

SYNCHRONOUS DATA
COMPRESSION
POINT OF VIEW



Nothing shrinks data like Motorola Codex's synchronous

data compression (SDC). Send data up to four times faster, so you can send more and pay less. Our 326XFast SDC modem provides synchronous speeds up to 72 Kbps over dial lines for network back-up and bandwidth-on-demand. Our 3512 SDC DSU offers speeds up to 256 Kbps over DDS for LAN and host-interconnect applications. Motorola, with products from Codex and UDS, takes the lead. Again. See for yourself. All you have to do is call 1 800 426-1212, ext. 510.



IBM's upcoming NetView for OS/2 to support SNMP asset management

By Elisabeth Horwitz

BOSTON

IBM will announce a revamped and expanded version of its OS/2-based systems management platform this fall that will support Simple Network Management Protocol (SNMP) for the first time.

It will also offer far more compatibility with its AIX-based sibling, NetView/6000, a company spokesman said at a customer briefing here last week.

Stated for shipment by Thanksgiving and demonstrated at last week's Share Technology Conference, NetView for OS/2 will act as a launching pad for IBM's 1998 rollout of a more integrated network management family, IBM spokesman said.

Yet despite a broadened management range, NetView for OS/2 is not much more likely than its predecessor to

move beyond staid IBM OS/2 shops, said David Passmore, president of Herndon, Va., consultancy Decisive, Inc. LAN administrators with no embedded OS/2 base are likely to resist "climbing the OS/2 learning curve."

Versatility

The upcoming platform will be able to manage any device equipped with an SNMP agent — including most leading hubs, routers and LAN adapters — as well as Unix-based and Novell, Inc. NetWare servers, IBM product manager Roger Rea said. It will also manage IBM's LAN Server and OS/2 systems through SNMP agents to be released concurrently, he added.

NetView for OS/2's predecessor, LAN NetView, was based on the Common Management Information Protocol.

NetView for OS/2 will add asset management to LAN

NetView's fault and performance management applica-

tions. In addition, the OS/2 platform will eventually provide a suite that shares a common graphical interface and data repository, Rea said.

IBM is also preparing to announce by midyear a repository for NetView/6000 that will provide logical management data views across its host, AIX and OS/2-based systems (CW, Aug. 11).

Meanwhile, some big OS/2 installations are showing strong interest in NetView for OS/2. Provident Life and Accident Insurance Co., for example, is testing the product as a way of managing its distributed OS/2 and LAN Server environment, said Gerry Williamson, senior systems programmer for communications at the Chattanooga, Tenn., firm.

Metropolitan Life Insurance Co. is eyeing the product for managing its OS/2/Windows and DOS workstations, according to Tu Liu, a software consultant at the New York firm. The product's "SNMP support" should also be useful as a way to integrate [the OS/2-based system] with our NetView/6000, which manages routers and bridges," he said.

NetView for OS/2 will be priced somewhere between NetView for Windows, which is priced at \$2,000, and NetView/6000, which costs \$15,000, Rea said.

Software agents

CONTINUED FROM PAGE 1

skeptical. "I don't know. Bozo filters don't work because you don't know who will be a bozo when," said Rick Golobio, senior member technical staff at Convair, a joint MCI Communications Corp./BT North America, Inc. venture in San Jose, Calif.

"There's plenty of places for agents. We just need to get swallowed in hype and recognize that it's also a behavioral issue," said Carol Anne Ogdin, a principal designer at Deep Woods Technology, a consulting firm in Santa Clara, Calif.

A main contributor to cybergum is the proliferation of useless information — a situation made possible by E-mail, Ogdin said in a session at GroupWare.

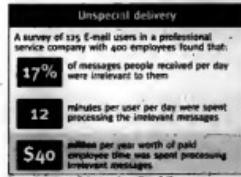
copiers, and individuals got numbers."

Most E-mail programs already let the sender mark certain messages as urgent. But what the sender believes is urgent, the recipient may ignore, Golobio said.

"It isn't that people want to send annoying E-mail. It's that they're clueless," said Art Giser, an independent consultant in San Francisco.

E-mail overload

The issue is coming to a head now as more users become connected to E-mail outside the company. At



so, more executives have E-mail on their desktops and experience the overload firsthand, Moroney said.

To help understand the broader ramifications, the EMA is launching a study into users' messaging habits and plans to publish the results next spring, he said.

Although data on the matter is scarce, Ogdin said a study done for a 400-employee client found that processing irrelevant E-mail took a total of 90 hours of employee's time per day (see chart).

The annoyance factor aside, a typical response to overwhelming amounts of irrelevant E-mail is to stop checking E-mail, Ogdin said. Then it is no longer a good medium for mission-critical data.

User lawsuits drag on

CONTINUED FROM PAGE 1

proprietary VRX operating system as well as the ITX operating system itself.

All told, the charges range from breach of contract to fraud to racketeering under the Racketeer Influenced and Corrupt Organizations Act (RICO). Damages claimed range from the cost of hardware, software and services (\$800,000 for one banking customer) to more than \$3 million for one customer filing under RICO.

"It's really got me in a hole," said litigator Joe Hopper, referring to Warehouse Manager Co. He is president of Hopper Specialty Co., a distributor of industrial hardware for oil and gas drillers in northwest New Mexico.

Terminal lockups, system deadlocks, slow processing and data corruption are the sins reported by Hopper and other Warehouse Manager users filings claims.

After purchasing the system in 1988, Hopper watched his then-\$4 million business dwindle to \$1 million in annual sales today. He is seeking \$4.2 million in lost profits plus the cost of the system, which he placed at \$250,000 to \$300,000.

An AT&T GIS spokesman acknowledged that Warehouse Manager is "a product that failed" and one that should have been "tested more thoroughly" when it was ported to the ITX operating system. The company no longer sells Warehouse Manager and claims to have settled all but eight of the more than 30 cases.

Tarnished image

The litigation is not expected to affect AT&T GIS revenue. Industry analysts also emphasized that lawsuits are common for large systems vendors. However, the negative publicity is troublesome, particularly for a vendor attempting to reshape itself as a solutions provider for vertical industries.

Because the cases involve either the NCR 9000 or 10000 systems and applications running on the ITX and VRX operating systems — a small and dwindling piece of AT&T GIS' revenue stream — several customers said the company has little incentive to take extraordinary measures to compensate the claimants.

But an AT&T GIS spokesman disagreed with that assessment, saying, "In all instances, we have always errred on the side of the customer."

In settling the cases, AT&T uses its Universal Agreement, which limits payments to the original cost of the products and services acquired, minus depreciation for use of the equipment.

One case not involving Warehouse Manager is that of Fulgen Provisions Co. in Portland, Ore. The company reached a settlement with AT&T GIS for Automated Food Control System from Smith Data Systems, which also ran on ITX.

In another case, Dayco Manufacturing in Rogers, Ark., lays the blame on the ITX operating system itself, according to attorney Ralph Barber. "We haven't completed the discovery process, but it is our contention that many other companies have experienced [similar] problems," he said.

The troubles cited in those cases — terminal lockup, data corruption and system deadlocks — are strikingly similar to the Warehouse Manager suits, court documents showed.

In addition, at least four banks have filed lawsuits for damages incurred through the use of an AT&T GIS financial services package called Universal Financial System. They are Warwick Savings Bank in Warwick, N.Y., Pawling Savings Bank in Newburgh, N.Y., First Bank of Orlando, Fla., (acquired last year by the Resolution Trust Corp.) and Central National Bank & Trust in Endicott, Ohio.

A reported 30 to 40 banks have bought the system, but most have discarded it, said a number of banking officials interviewed last week.

The software, they said, never performed correctly. Most have turned back to an older NCR application or are looking at client/server systems from other companies.

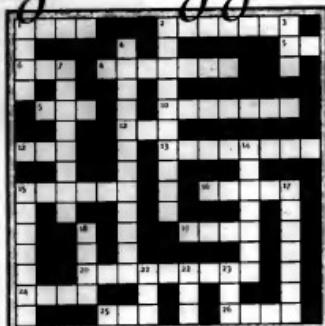
"We have documentation that they sold us a bill of goods," said the president of a bank who wished to remain anonymous.

"The problems in these banks have been absolutely catastrophic," said Norm Cohen, a consultant specializing in computer litigation at Computer Consulting Systems in Atlanta.

Last July, a Westchester County, N.Y., arbitrator ordered NCR to pay Warwick Savings \$818,000 in damages following problems the bank suffered during its two-year struggle with the software in 1988 and 1989. Warwick employees declined to comment, as did the attorney who represented them.



Overview



ACROSS

- Graphic symbol on screen.
- Translator from a source to an executable program.
- Array for extended architecture.
- Potentially harmful computer viruses.
- G-word in GIGO.
- Portfolio manager's entries.
- R-word in RISC.
- College computer major.
- _____ icon.
- Programming model.
- What book publishers do with disks.
- Hyperlink file.
- User-defined _____.
- CAD (near verb).
- Smart-access storage device.
- Take _____.

DOWNS

- Worldwide computer trade association.
- Digital realm.
- Extravagant extension.
- Movie about virtual reality.
- Post-
- Message lines with user controls.
- Pertaining to binary notation.
- Reduction of space between characters.
- First-in, first-out.
- Another executable file extension.
- Worldwide standard syntax.
- Basic logic operator.

Source: From the Spring 1994 issue of the McGraw-Hill Computer Book Update



How to contact Computerworld editors:

Phone:	Fax:
Mass office, Framingham, Mass.	(508) 879-0700
24-hour BBS line	(508) 879-0731
Mid-Atlantic bureau, Rochelle Park, N.J.	(201) 587-0090
Washington bureau, Washington	(202) 347-0134
Midwest bureau, Des Plaines, Ill.	(708) 827-4433
West Coast Bureau, Burlingame, Calif.	(415) 347-0555
Northwest bureau, Bellevue, Wash.	(206) 641-7770

► ELECTRONIC MAIL: Computerworld's writers and editors have individual MCI Mail accounts. Most of our staff members can be reached via MCI Mail by addressing messages to their first and last names as they appear on the masthead, which is opposite the editorial page. For a complete list of editorial MCI Mail addresses, message Linda Gorgone at 597-8084.

► Our Computerworld account number is 76537-2413. Please use that account only for communications with writers and editors. Direct subscription inquiries to ComputerServe: 73373.3230.

► Letters to the editor and other editorial-related messages can be sent via Internet to letters@cw.com

► CLERK/SEWER: JOURNAL: Contact Editor Alan Alper at (508) 820-8125 or via Internet at alper@cw.com

► SUBSCRIPTIONS: Inquiries and changes of address should be sent to P.O. Box 2043, Marion, Ohio 43305-2043 or call (800) 669-1002.

► REPRINTS: Contact Sharon Bryant at (508) 820-8125.

► REPRINT REFERENCE CLIPPING SERVICE: (Box 343-6474 5554)

Inside Lines

Digital's Rdb database still trolling for a buyer
Computer Associates has bowed out of talks with Digital about buying the Rdb business, leaving Oracle as the most likely candidate, a source close to CA said. While most observers say Oracle's main interest in the Rdb is the large installed base, the company could benefit from the purchase since Digital reportedly made money on Rdb in 1990. Digital and Oracle executives declined to comment on the possible deal, which one Wall Street analyst speculated would be announced within 30 to 60 days. "If they can come to terms."

You make me feel like a natural keyboard . . .

Microsoft's Natural Keyboard, due out this fall, boasts a special contoured keyboard for better ergonomics, sources said. The keyboard would be the envy of any typewriter, with its aerodynamic angles and swooping wrist rest. The keys are broad, so handle pain in when typing. The keyboard will be the first to contain a warning label about the dangers of typing. Perhaps Microsoft wants to cover its assets in case repetitive stress injury sufferers are better at lawsuits than the Department of Justice.

Bill Gates: Slave to fashion?

Bill Gates may just be the next *CG-engine* computer executive. National Public Radio's "Talk of the Nation" last week tackled the weighty topic of workplace fashion. One of the style experts on the panel noted that Gates' personal tailor had called him recently looking for advice. Seems the tailor is stuck with the unenviable task of giving the rumpled, rather casual billionaire "a makeover."

Compaq's RISC-y little secret

Compaq is working on a prototype "microprocessor-independent box," according to a senior executive at the company. The server will be able to use a wide variety of processors including RISC chips such as PowerPC, Sun Microsystems' SPARC and IBM's PA-RISC. Like Digital's DL3000 XL series of desktop computers, Compaq's box could give users multiple busses between CISC and RISC architectures within the same hardware platform through exchangeable processor cards.

The sword in the stone

Racel-Datcom and Wellfleet next week are expected to join forces in the remote-access market. Racel's ExecuLink DCE/FCU platform will merge with Wellfleet's Access Node 2000 remote office router. The devices will ease the migration of mainframe applications to client/server environments in branch offices, according to sources close to Racel. The deal marks Wellfleet's first joint development effort with another provider for remote access, the sources said.

Simon says: Sell

Wellfleet will today introduce Share, its IBM-designed smart phone. The brick-size cellular phone has a pen for digital input, a PCMCIA slot, a 0.85 MHz/256KHz processor and a series of menus for address books and phone numbers. It doesn't have a dial pad because calls are made by touching the pen to the digitized number pad on-screen. People may not listen to the Simon pitch, though, when they see the price tag. Sources say Simon will sell for more than \$600, a lot of money for a cellular phone with a fax.

We're especially fond of this tongue-in-cheek comment that accompanies a shareware package called *EasyFlow*: "It's *EasyFlow* doesn't work, though. It goes lose millions because *EasyFlow* measures up, it's you that's out millions, not us. If you don't like this disclaimer, though, We reserve the right to do the absolute minimum provided by law, up to and including nothing. This is basically the same disclaimer that comes with all software packages, but ours is in plain English and theirs are in legalese. We didn't really want to include any disclaimer at all, but our lawyers insisted." To get in touch with Computerworld about similar sounding tips or real news items, call our 24-hour, post-call BBS: Hp New at (508) 820-8655 or our toll-free number at (800) 345-8174. News editor Maryann Johnson can be reached by phone at (508) 820-8174, via the Internet at mjohnson@cw.com or through MCI Mail at 590-2017.

"The new **Informix** database server architecture will put the vendor ahead of competitors **Oracle** and **Sybase** in support of multiprocessing systems."

Parallel Database Technology That's As Dynamic As Your Organization.

Recently, Informix Software introduced Dynamic Scalable Architecture,[™] a next-generation database architecture designed to take advantage of parallel processing. The result is a technological breakthrough in client/server database performance and scalability. Informix's Dynamic Scalable Architecture will run on the entire range of new, high-performance open systems, from uniprocessors to symmetric multiprocessors, loosely coupled clusters, and massively parallel machines.

John Morrell, International Data Corporation:

"The Informix Dynamic Scalable Architecture has the potential to vault Informix past its primary competitors for high-end database processing functionality."⁹⁹

Peter Kastner, Aberdeen Group:

"Sybase and Oracle lack the clarity of Informix's architecture. They're going to have to go back to their labs."⁹⁹

Bob Thomeler, Mats Group:

"Informix may have the best scalable server technology today... I think people are mistaken in not taking the time to really look at Informix."⁹⁹

**Gordon Kerr, Senior VP, Management Information Systems,
Motel Hotels and Resorts:**

"What Informix has done with DSA is make it much easier for me to plan for the future. We're beginning to deploy symmetric multiprocessing hardware through our organization, and I know that if and when we determine we need to scale up to loosely coupled or MPP machines, our Informix applications will be able to make the move with us."⁹⁹

Michael Bloomberg, Bloomberg Financial Markets:

"Informix developed core internal parallelism in DSA, which is different than other types of add-on parallel database capabilities we've seen. Since the parallel processing features are internal, rather than external, we're expecting impressive performance gains. It's clear that Informix thought this technology through."⁹⁹

Find Out Why DSA[™] Is So Different.

We'd like to tell you more about Informix's Dynamic Scalable Architecture, including an independent report from the Aberdeen Group. Send or call toll-free 1-800-888-IFMX, ext. 18 for your free copy.

Chicago's promising.

There's no need to hold your breath for a 32-bit operating system that delivers an intuitive object-oriented interface, reliable pre-emptive multitasking, drag 'n drop ease, and long filename support. Over 5 million people have been going that route with OS/2. There's a whole fleet of

earlier than expected.

32-bit OS/2 programs you can take off with right now. And with newly announced versions for Symmetric Multiprocessing (SMP) systems and PowerPC™ OS/2 can take you way beyond Chicago.

If your destination is a 32-bit operating system



that's already earned its wings, not to mention a few dozen awards, OS/2 is the only way to go. To order or find out more about OS/2, call 1 800 3-IBM-OS2. In Canada, call 1 800 465-7999. OS/2 is also available at local software dealers.

Operate at a higher level.™

IBM®